THRILLING WONDER STORIES

15¢

FEB

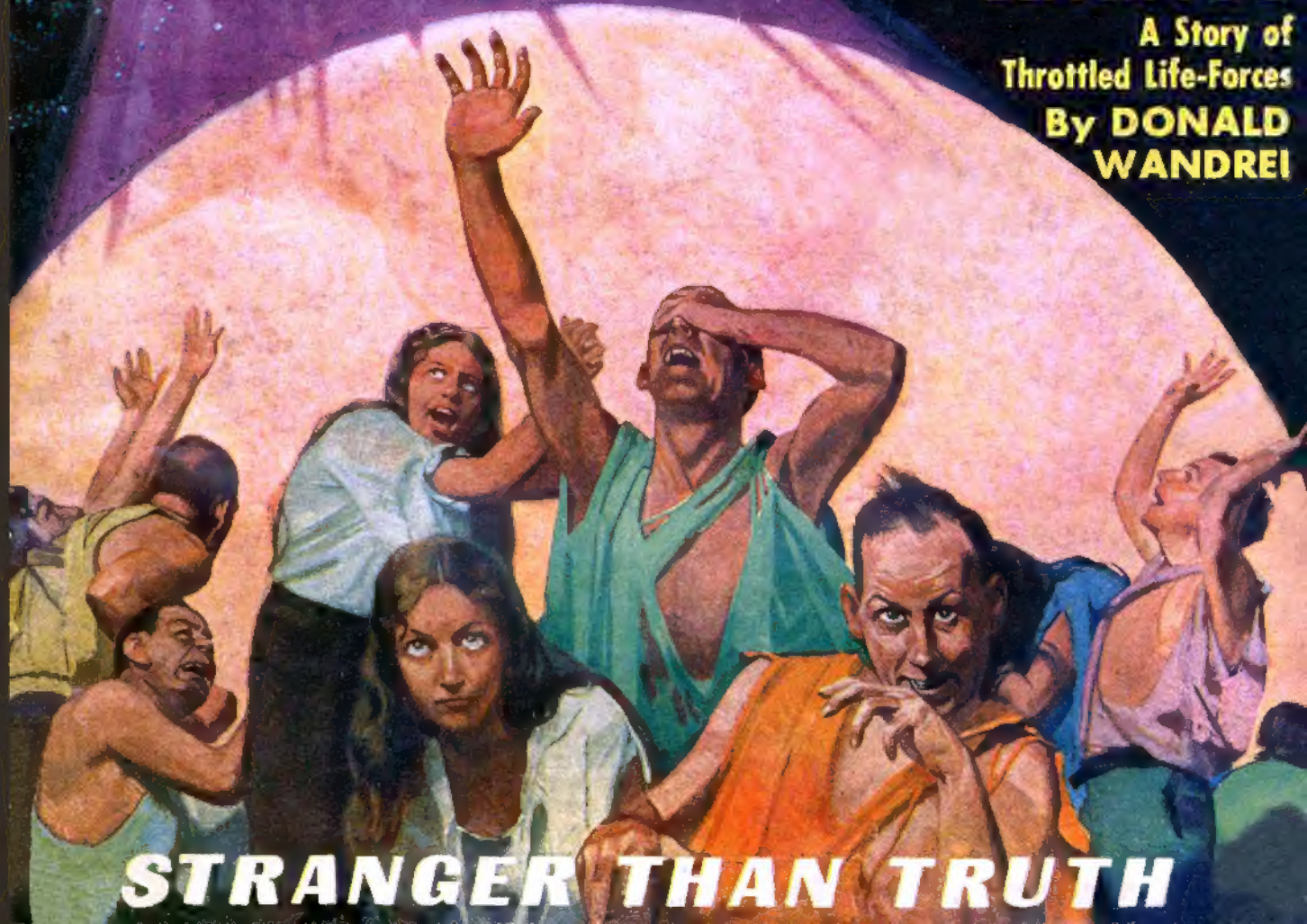
A THRILLING PUBLICATION

FEATURING

INVADERS FROM THE OUTER SUNS
A Novelette of Cosmic Exploration
By FRANK BELKNAP LONG, JR.

BRAIN OF VENUS
A Novelette of Universal Destruction
By JOHN RUSSELL FEARN

BLACK FOG
A Story of Throttled Life-Forces
By DONALD WANDREI



STRANGER THAN TRUTH

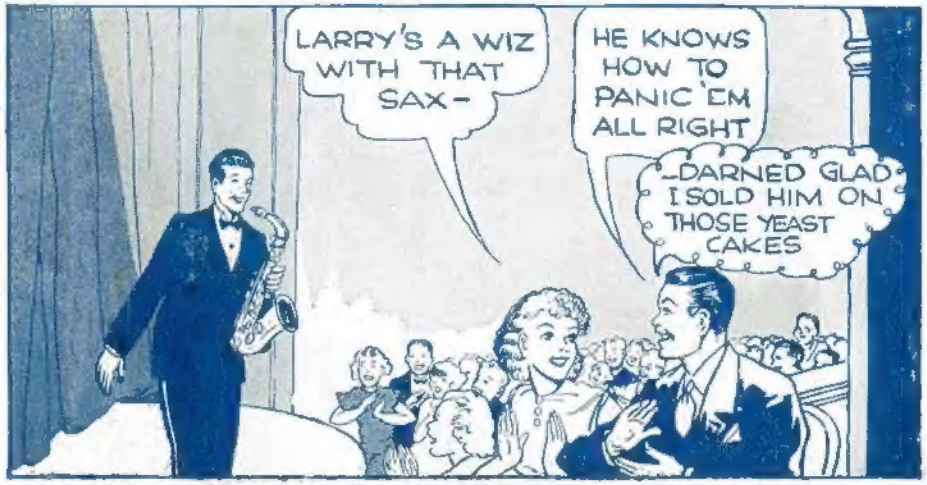
15¢ Thrilling WONDER Stories FEB. 1937

READ HOW LARRY'S PIMPLY FACE ALMOST MADE HIM QUIT THE SHOW

SAY – WHAT'S BITING YOU? YOU'RE NOT SERIOUS ABOUT NOT BEING IN THE SHOW, ARE YOU?
I CERTAINLY AM – WHAT D'YOU FELLOWS TAKE ME FOR? THINK I WANT TO GET UP AND PLAY IN FRONT OF A BUNCH OF PEOPLE WITH THIS PIMPLY FACE? NOT MUCH!

NEXT DAY
TAKE IT FROM ME LARRY – THESE YEAST CAKES ARE SLICK STUFF TO FINISH OFF PIMPLES – JUST YOU START EATING 'EM RIGHT OFF!
GEE CHARLIE – YOU SURE ARE ONE SWELL GUY!

LATER
HEY CHARLIE – TAKE A SQUINT AT MY FACE – THAT FLEISCHMANN'S YEAST WORKED
WELL I TOLD YOU IT WOULD CHASE THOSE BLOSSOMS – DIDN'T I?



DON'T LET ADOLESCENT PIMPLES KEEP YOU FROM BEING A HIT

MANY young people suffer from ugly pimples after the start of adolescence—from about 13 to 25, or even longer.

At this time important glands develop. This causes disturbances throughout the system. The skin, in particular, gets oversensitive. Waste poisons in the blood irritate this sensitive skin—pimples appear.

Fleischmann's fresh Yeast helps to clear these skin irritants out of the blood. Then, the pimples go.

Just eat 3 cakes *daily*—one about ½ hour before each meal—plain, or in a little water. Do this until your skin is entirely clear again. Start now!

—clears the skin
by clearing skin irritants out of the blood

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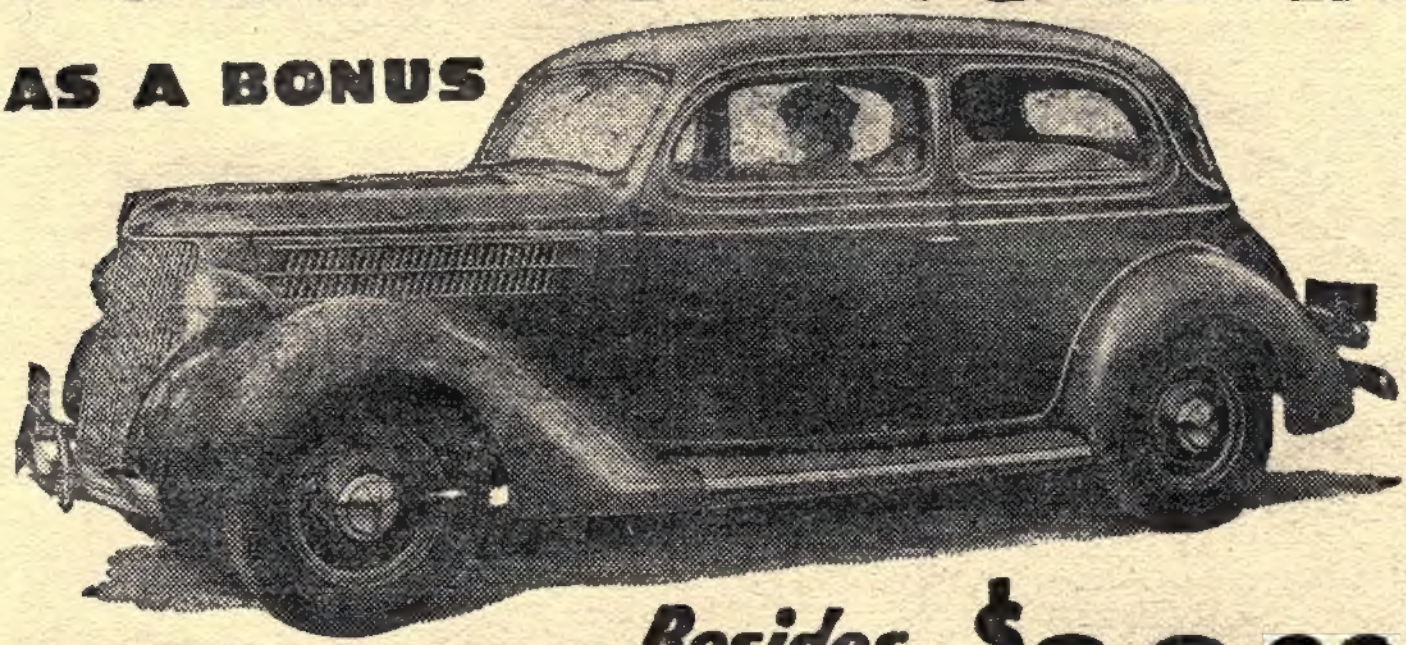
THIS BEAUTIFUL NEW

FORD TUDOR SEDAN

AS A BONUS



Besides A WONDERFUL OPPORTUNITY TO MAKE UP TO $60.00 IN A WEEK

If you are out of work or on part time and need cash at once to pay your bills and live on, you are just the person I am looking for. I have a good offer for you right now—a wonderful opportunity to start right in making up to $10.00 in a day and quickly advance your earnings as you become established.

I Send Everything You Need

Experience or previous training is unnecessary. I send you everything you need to make big earnings from the very first day. You will act as Local Distributor for my million-dollar company. You will look after your customers' orders, fill them, and handle the money. A big part of every dollar you take in you keep as your pay. Once started I'll give you credit and you can build on my capital. Even starting part time you can enjoy earnings up to $27.50 in a week; up to $60.00 in a week for full time. In addition to your cash earnings, I'll give you a brand-new Ford Tudor Sedan as a bonus for producing.

$96 in a Week

You may wonder at making so much money in such a pleasant, simple manner. Clare C. Wellman, N. J., reported that he cleared $96.00 in a week. Hans Coordes, Neb., stated he made $27.95 in a day; $96.40 in a week. Ruby C. Hannen, W. Va., reported $73.00 in a week. I have scores of reports of exceptional earnings like these as positive evidence of the amazing possibilities of my offer to you.

Send No Money—Just Name

I need more men and women at once. Send me your name so I can lay the facts before you, then you can decide if the earning possibilities are satisfactory. Don't miss this chance. It doesn't cost you anything to investigate. You can't lose by mailing the coupon or a penny postcard for free details. Do it today—NOW.

ALBERT MILLS, Pres.

3716 Monmouth Ave. Cincinnati, Ohio

MAIL COUPON—NOW

ALBERT MILLS, Pres.
3716 Monmouth Ave., Cincinnati, Ohio

Send me the free facts about your Local Distributor offer. Tell me how I can make up to $60.00 in a week and get a brand-new Ford Tudor Sedan as a bonus in addition to my cash earnings.

Name .....

Address .....

.....

(Please print or write plainly)

THRILLING WONDER STORIES

The Magazine of Prophetic Fiction

VOL. 9 No. 1

FEBRUARY, 1937

IN THE NEXT ISSUE

•

JUDGMENT SUN

A Complete Novelette of Doomsday Panic

By

EANDO BINDER

•

THE ASTOUNDING EXODUS

A Complete Novelette of World Conquest

By

NEIL R. JONES

•

ELIXIR OF DOOM

A Complete Novelette of Atomic Adventure

By

RAY CUMMINGS

•

FLIGHT OF THE SILVER EAGLE

A Complete Novelette of Future Warfare

By

ARTHUR LEO ZAGAT

•

—and many other unusual Novelettes and Stories

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• ON THE COVER

The malignant brain of a condemned criminal comes to life on another planet and radiates force-rays of madness and death. This painting symbolizes the theme of John Russell Fearn's novelette, BRAIN OF VENUS.

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Manuscripts must be accompanied by self-addressed, stamped envelopes, and are submitted at the author's risk.

YES- I'M CONVINCED THAT I CAN MAKE GOOD MONEY IN RADIO. I'M GOING TO START TRAINING FOR RADIO RIGHT NOW.
NO- NOT ME. I'M NOT GOING TO WASTE MY TIME. SUCCESS IS JUST A MATTER OF LUCK AND I WASN'T BORN LUCKY.
BILL SAID "YES" HE'S MAKING GOOD MONEY IN RADIO NOW
THIS N.R.I. TRAINING IS GREAT. AND THEY SENT REAL RADIO PARTS TO HELP ME LEARN QUICKLY
YOU CERTAINLY KNOW RADIO. MINE NEVER SOUNDED BETTER.
I'VE BEEN STUDYING RADIO ONLY A FEW MONTHS AND I'M ALREADY MAKING GOOD MONEY IN MY SPARE TIME
THANKS
OH BILL! I'M SO PROUD OF YOU. YOU'VE GONE AHEAD SO FAST IN RADIO
YES! I'VE GOT A GOOD JOB NOW AND A REAL FUTURE. THANKS TO N.R.I. TRAINING
TOM SAID "NO" HE'S STILL WAITING FOR "LUCK"
BILL'S A SAP TO WASTE HIS TIME STUDYING RADIO AT HOME
SAME OLD GRIND -- SAME SKINNY PAY ENVELOPE -- I'M JUST WHERE I WAS FIVE YEARS AGO
GUESS I'M A FAILURE. LOOKS LIKE I'LL NEVER GET ANYWHERE
YOU'LL ALWAYS BE A FAILURE, TOM, UNLESS YOU DO SOMETHING ABOUT IT. WISHING AND WAITING WON'T GET YOU ANYWHERE

I WILL TRAIN YOU AT HOME *in Spare Time*

FOR A GOOD RADIO JOB

J. E. SMITH, President
National Radio Institute

Many Radio Experts Make $30, $50, $75 a Week

Do you want to make more money? Broadcasting stations employ engineers, operators, station managers and pay up to $5,000 a year. Spare time Radio set servicing pays as much as $200 to $500 a year—full time servicing jobs pay as much as $30, $50, $75 a week. Many Radio Experts own their own full time or part time Radio businesses. Radio manufacturers and jobbers employ testers, inspectors, foremen, engineers, servicemen, paying up to $6,000 a year. Radio operators on ships get good pay and see the world besides. Automobile, police, aviation, commercial Radio, and loud speaker systems offer good opportunities now and for the future. Television promises many good jobs soon. Men I trained at home are holding good jobs in all these branches of Radio.

Many Make $5, $10, $15 a Week Extra in Their Spare Time While Learning

Practically every neighborhood needs a good spare time serviceman. The day you enroll I start sending you Extra Money Job Sheets. They show you how to do Radio repair jobs that you can cash in on quickly. Throughout your training I send you plans and ideas that have made good spare time money for hundreds of fellows. I send you special equipment which gives you practical Radio experience—shows you how to conduct experiments and build circuits which illustrate important principles used in modern Radio sets. My Free Book tells all about this.

Find Out What Radio Offers You

Mail the coupon now for "Rich Rewards in Radio." It's free to any fellow over 16 years old. It describes Radio's spare time and full time opportunities, also those coming in Television; tells about my training in Radio and Television; shows you actual letters from men I have trained, telling what they are doing and earning; tells about my Money Back Agreement. MAIL THE COUPON in an envelope, or paste it on a penny postcard—NOW!

J. E. SMITH, President
National Radio Institute, Dept. 7A00
Washington, D. C.

J. E. SMITH, President
National Radio Institute, Dept. 7A00
Washington, D. C.

Dear Mr. Smith: Without obligating me, send "Rich Rewards in Radio," which points out the spare time and full time opportunities in Radio and explains your 50-50 method of training men at home in spare time to become Radio Experts. (Please Write Plainly.)

NAME.....AGE.....

ADDRESS.....

CITY.....STATE.....

The Story Behind the Story

WE'RE gratified by the numerous letters from readers of THRILLING WONDER STORIES expressing interest in this new department, which is intended essentially to take the reader behind the scenes and show him just what motivates the authors to write the stories in each issue. Now that you've read all the yarns in this number, we're certain you'll be curious as to how the plots were evolved. Here's how FRANK B. LONG, JR., explains the origin of his fine novelette, INVADERS FROM THE OUTER SUNS:

It seemed to me inconsistent that writers should attribute customary human motives to creatures produced by another evolutionary life. The psychology of Earthly beings is very much the same in very dissimilar races and even species. Civilized men and savages share a desire to maintain existence however unpromising it may become: the ant and the caterpillar; every creature in every phylum struggles against extinction. The individual may dissent but the great impulse of its myriad brothers is to cherish life. Life, however—on a planet other than Earth—might assume different forms and possess only a hazy approximation to the life with which man is familiar. Why should a race spawned on some alien planet in an alien galaxy share terrestrial emotions? Just as it would vary physically, there would be a bridgeless gap lying between its basic psychology and that of man. This notion rather fascinated me and I imagined a race whose impulse was not to live, but only tolerate life and cease it when external forces blocked or destroyed its path.

Not one element in that race would correspond to our fear or hatred or passion. Its motives would elude our comprehension. I have depicted such beings in the story. As a background for this realistic plot—for it is essentially realism applied to conditions beyond those familiar to us—I have chosen the most romantic of planets—cryptically ringed Saturn, clustered with unknown moons.

POLAR CATASTROPHE

JACK WILLIAMSON'S novelette of tragedy in the polar wastes, THE ICE ENTITY, has an interesting basis. This is what the author says about it:

The riddle of life has always intrigued me, as it must, somehow, every being that lives. Life, the ultimate mystery! Was it pure accident, mere fortuitous congregation of atoms, that brought into the universe this miraculous new entity? This substance that grows and perpetuates itself in a hostile environment, that adapts itself, that knows, reasons, feels.

Or was life inevitable, inherent in the very nature of the atom? The filterable viruses seem to be on the border-line, in some ways living, in some mere chemicals. The recent speculations of Jeans and others (with which I don't personally agree) suggest that the universe itself is an expression of mind, and this makes of life—of which mind is the essence—something vastly more important than an accidental scum on an insignificant speck of a planet.

I don't remember when I first came upon the idea for this yarn—it was some years ago. I like to speculate on the origin and meaning of life, and the form that vital processes might take under different conditions.

Actually, ice crystals—or snowflakes—are similar in many ways to living beings. They grow, following a general plan; yet each is individually unique. When injured, they tend to repair themselves. Their "life processes" liberate energy—the appearance of latent heat. They can propagate themselves, when introduced into supercooled water.

Ice has been important in the geologic history of Earth—there is a theory that our present temperate weather is just a minor break in the great ice-age. It is an interesting fact that the ice upon the earth tends to perpetuate itself—with their high reflecting power, fields of ice and snow increase the planet's albedo, and lower the amount of solar radiation absorbed. Which means more ice and snow! It has been estimated, I think, that an average temperature drop of about four degrees would be enough to plunge the earth into a new ice age, that might last thousands of years.

So much for the scientific theme. The real problem was how to present it. It is a psychological truth that people are interested only in people. Any abstract idea, scientific or otherwise, is really interesting only because it's of human meaning, conscious or unconsciously appreciated.

Psychologists have discovered that what people "know"—in the shallow conscious mind—is much less important than what they feel. To give an idea its full expression, then, the writer must appeal not only to the reason but the emotions.

The writer must show the full human meaning of his theme. He must present not just the bare idea, but real characters responding to it in the conflict of a dramatic plot; setting and style must fit and strengthen the emotional acceptance of his basic idea.

The science fiction story—from this point of view—is then a scientific instrument, perfected by modern psychology, for the complete expression of scientific ideas. A bald way of putting it, perhaps. But the complete—and successful!—expression of any idea is called art.

THE ICE ENTITY was begun three years ago, in Key West, but it didn't thrive in that tropical atmosphere; the rigor of a New Mexico blizzard was required to get it finished.

MUTINY IN SPACE

JOHN RUSSELL FEARN, the noted English science fiction writer, presents the salient facts that inspired his novelette of a mutiny in space and the grim aftermath, as related in BRAIN OF VENUS. Here's what he has to say:

I wrote this particular story because I felt there were distinct possibilities in the conception of a criminal brain nurtured by the chemical elements of a little-known planet—namely, Venus. Clearly such an occurrence could not be allowed full play on Earth, hence the idea of the Chinese brain being conveyed to Mars and the rebellion en route which caused it to be lost on Venus, whereon its deadly powers rose to the full.

The idea itself was mainly an outcome of that very old s-f plot—protoplasm gone mad, but so far as I know a Brain had not yet gone mad—at least not on another planet to the detriment of Earth. Gathering to itself the stimulative powers of Venus it revealed what a brain, unhampered, could really accomplish in the control of cosmic forces and will power.

There is little reason to suppose but what the forces that brought life into being on this planet might not be rife on another world, whereupon their actions upon a mature brain would be pretty similar to those related in "Brain of Venus."

MYSTERIOUS FOG

WE'RE sure DONALD WANDREI'S fascinating story of throttled life-forces will prove a tremendous hit with you. There's a strong, compelling reason why BLACK FOG was written. Here's what Mr. Wandrei says about it:

The story-idea began germinating one night when I was looking at the dark nebula in Orion and wondering about the various guesses that astronomers have made as to the origin and nature of dark nebulae. It then occurred to me that if the dark nebula sped toward Earth at the speed of light, no astronomer could possibly be aware of its existence until the moment when it reached Earth. That in turn started me off on the effects it might produce, especially if it should be charged with cosmic energy or irradiation of a new kind, and providing its mass was so small that it would not produce phenomena of a violent, physically destruc-

(Continued on page 8)

Why *Good Dancers* Are Popular!

Good dancers are good mixers. They create a favorable impression—have ease of manner, a pleasing assurance that wins. No wonder people find them interesting—seek their company!

By ARTHUR MURRAY

World-Famous Dancing Authority

GOOD dancers are always popular—sure of a good time wherever they go!

And dancing is great fun—wonderful exercise. Keeps you happy and healthy—always on your toes and full of pep. Develops self-confidence—enables you to make friends easily—often opens the door to important business and social contacts.

And it's so easy now to be a brilliant, finished dancer, able to do all the newest, smartest steps! For I have developed a remarkable new method of teaching dancing by mail, which is so simple that *you can learn any of the latest steps in one evening*—right at home, in the privacy of your own room, with or without music—with or without a partner!

Easy as A-B-C

With my amazingly simple lessons you start right at the beginning and go through the entire field of social dancing. You learn to master every step from the simple waltz to the newest, smartest steps and all their variations.

You study the lessons in your own home whenever you find time. No one to watch and embarrass you. No expensive private teacher to pay. Yet, almost before you realize it, you will be able to step on the floor with the best dancers of your set—and with as much ease and assurance as if you had been dancing for years!

I have already taught thousands and thousands of men and women how to dance through this amazingly simple method. Folks who used to stay home and miss all the fun are now having the time of their lives. They make friends easily—they're welcome and popular wherever they go.

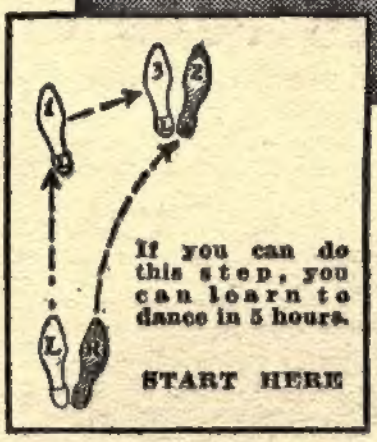
And I'm so positive that you, too, can become a good dancer and get your full share of fun and popularity through my new, easy method that I'm willing to send you *my Beginner's course for only* $1.98!

5 Days Trial

Just mail the coupon and the Beginner's course will be sent to you immediately. When it arrives, pay the postman only $1.98, plus few cents delivery charges, then use it for five days—study it—practice the steps. See for yourself how easy it is to become a finished dancer—sought after, popular—the Arthur Murray way.

Remember—if you're not absolutely delighted with results, simply return the course within five days and *your money will be promptly refunded.*

That's a fair offer, isn't it? *You can't lose!* Don't wait—you owe it to yourself to clip and mail this coupon NOW. Arthur Murray, Studio 263, 7 East 43rd Street, New York City, N. Y.



BEGINNER'S COURSE

$1.98

ARTHUR MURRAY, Studio 263,
7 East 43rd Street, New York City, N. Y.

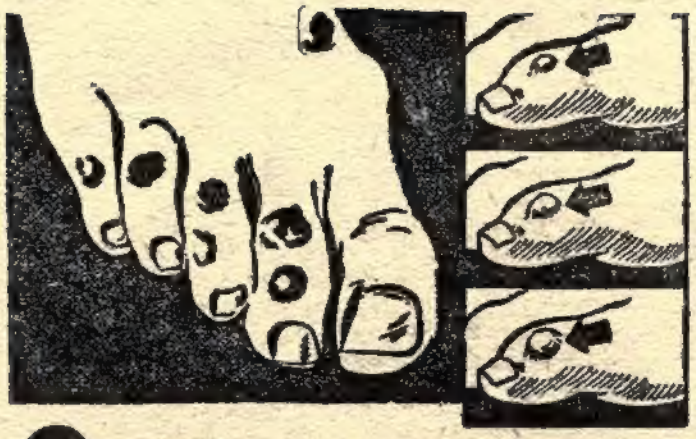
To prove that I can learn to dance at home, you may send me your Special Beginner's course for only $1.98, plus few cents postage. I understand that if not delighted I may return the course within five days and my money will be refunded.

Name .....

Address .....

City ..... State .....

NOTE: If apt to be out when postman calls, send $2.00 with coupon and save C.O.D. postage.



Corns COME BACK BIGGER AND UGLIER

unless removed Root* and All

A CORN goes deep! When you cut or pare it at home, you merely trim the surface. The root remains imbedded in the toe. Soon the corn comes back bigger—more painful—than ever.

But when you Blue-Jay a corn, it's gone for good. In 3 short days the corn lifts out—root and all.

Blue-Jay is a tiny, modern, medicated plaster. Easy to use. Held snugly in place by Wet-Pruf adhesive. Cannot stick to stockings. Get Blue-Jay today and completely banish corns, root and all. 25¢ for package of 6 at all druggists.

FREE OFFER: We will be glad to send one Blue-Jay absolutely free to anyone who has a corn, to prove that it ends pain instantly, removes the corn completely. Just send your name and address to Bauer & Black, Dept. B-40, 2500 South Dearborn Street, Chicago, Ill. Act quickly before this trial offer expires. Write today.

*A plug of dead cells root-like in form and position. If left may serve as focal point for renewed development.

Don't Sleep on Left Side, Crowds Heart

GAS PRESSURE MAY CAUSE DISCOMFORT RIGHT SIDE BEST

If you toss in bed and can't sleep on right side, try Adlerika. Just ONE dose relieves stomach GAS pressing on heart so you sleep soundly.

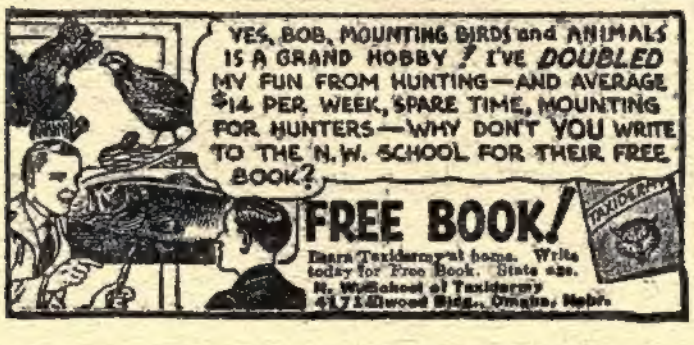
Adlerika acts on BOTH upper and lower bowels and brings out foul matter you would never believe was in your system. This old matter may have poisoned you for months and caused GAS, sour stomach, headache or nervousness.

Dr. H. L. Shoub, New York, reports: "In addition to intestinal cleansing, Adlerika greatly reduces bacteria and colon bacilli."

Mrs. Jas. Filler: "Gas on my stomach was so bad I could not eat or sleep. Even my heart seemed to hurt. The first dose of Adlerika brought me relief. Now I eat as I wish, sleep fine and never felt better."

Give your bowels a REAL cleansing with Adlerika and see how good you feel. Just ONE dose relieves GAS and stubborn constipation. At all Leading Druggists.

TRIAL OFFER For SPECIAL TRIAL SIZE send 10c, coin or stamps, to Adlerika, Dept. 112, St. Paul, Minn.


YES, BOB, MOUNTING BIRDS and ANIMALS IS A GRAND HOBBY! I'VE DOUBLED MY FUN FROM HUNTING—AND AVERAGE $14 PER WEEK, SPARE TIME, MOUNTING FOR HUNTERS—WHY DON'T YOU WRITE TO THE N.W. SCHOOL FOR THEIR FREE BOOK?
FREE BOOK!
Learn Taxidermy at home. Write today for Free Book. State age.
N. W. School of Taxidermy
4171 Elwood Bldg., Omaha, Nebr.
TAXIDERMY

THE STORY BEHIND THE STORY

(Continued from page 6)

tive form. In other words, what would happen if the black cloud simply shot through this world and its inhabitants much like X-Rays, or cosmic rays?

BLACK FOG developed from these speculations. In the story I have touched on many of the changes and mutations that would ensue over a period of time, though there was not space enough to delve into them all thoroughly and in detail. The rapid revolution in the economic, social, and political structure of civilization; the decline of vegetation and the disappearance of animal species; climatic fluctuations and disturbances; decrease in precipitation, thinning of the atmosphere, and the inevitable shift in the proportions of its gaseous elements—each of these and the numerous other changes could be made the subject of exhaustive analysis. And each, of course, would cause a whole new series of results. The theme has almost endless ramifications and probabilities. My interest lay in combining the story with the main scientific principles involved, since it would require a group of specialists in different fields to cover all the ground.

THE INSECT PLAGUE

PROTOPLASMIC STATION, by PAUL ERNST, has a curious genesis. The idea of insect domination occurred to Mr. Ernst in the following fashion:

The idea for PROTOPLASMIC STATION grew really, I suppose, in an indirect way, out of a recent change in my way of living. I have deserted the city for the country. And out here, with hard pavements far away and elemental facts nakedly exposed, I've come up against something which country people have always known but which has remained serenely unknown to city dwellers. I refer to insect plagues, vaguely thought of now and then by city folks, but not actually comprehended.

I'm comprehending them now, when I see trees and bushes thick with beetles, fruit trees yellowing with the attack of caterpillars, crops of all kinds fighting a losing fight, each with its own kind of insect murderer. Around here the patient farmer sprays nine times—count them—in a single season if he hopes to get apples off his trees. And each year it gets worse, due to international shipping; foreign pests are allowed to come into our country to mingle with the killers we already have, and constantly improved fruits and vegetables become less and less able to withstand blights.

Old stuff? Sure. But it was new to me, and I was deeply impressed by it. We've all heard the prediction, made by men with resounding scientific achievements to their credit, that eventually man will lose his battle with insects—and that in the not too remote future—if he cannot regiment himself once and for all to fight efficiently against them. I believe that now! And, with the deadly evidence right in front of my eyes, I kept speculating about what sort of weapon science might devise to do battle against the bugs and worms. The idea of a devouring protoplasm emerged; and I was intrigued enough with it to want to write a story. However, the insect angle in fiction has been done. And done! So the story was shelved until it occurred to me that such a weapon against insects would also be a terrible one against men—if any one were mad enough to unleash it.

In PROTOPLASMIC STATION, I assumed the existence of such power-mad men, and then pitted them against the more benevolent guardians of the protoplasm.

The result was a story in which the insect angle was only incidental, and the misused weapon to exterminate them the main feature. It interested me in the writing, at least. I hope it interests the readers too.

●

To Learn What Readers Think of

THRILLING WONDER STORIES

Turn to

The Reader Speaks

ON PAGE 122

SCIENTIBOOK REVIEW

WORLDS WITHOUT END. By H. Spencer Jones. $3.00. Macmillan, 1935. (With 32 excellent photos.)

"In this book I have endeavored to give a picture of the Universe and of the place that the Earth occupies in it, as revealed by astronomical observation."

This concise opening sentence by the author is the theme followed in presenting to the layman a general picture of the Cosmos. Attention is paid to results and facts, rather than methods and theory. Starting with Earth, our home, the author takes us to the Moon, then to the planets, and finally outward into space.

WORLDS WITHOUT END tells just what the common man wants to know of the earth, the moon, the sun, the planets: their motions, atmosphere; of the comets, shooting stars, and constellations; of the relative size, brightness and distances of stars, and of their elements, age and evolution; of twin stars, pulsating stars, new stars, and of the countless other universes than ours.

The last chapter is an interesting discussion of the Cosmos as a whole; its past and its probable destiny. A pleasant book of the heavens, saturated just enough with information to give a combination of easy reading and worthwhile knowledge.

—M. W.

Every Story a Winner!

IN

THRILLING SPORTS

•

EVERY MONTH—10c AT ALL STANDS

A Bigger Job— *and You're the Man*

Are you hunting a bigger job, or does the bigger job hunt you? Why waste priceless years at routine work, when you can acquire at home in a comparatively few months the specialized knowledge for which big firms pay big money? Thousands of men have greatly increased their incomes by the new home-study business training under the LaSalle Problem Method. Let us show you how you can do just as well or better. The coupon will bring you complete information, together with details of our *convenient payment plan;* also your free copy of a remarkable book—"Ten Years' Promotion in One." Make your start toward that bigger job *today.*

—Find Yourself Through LaSalle!—

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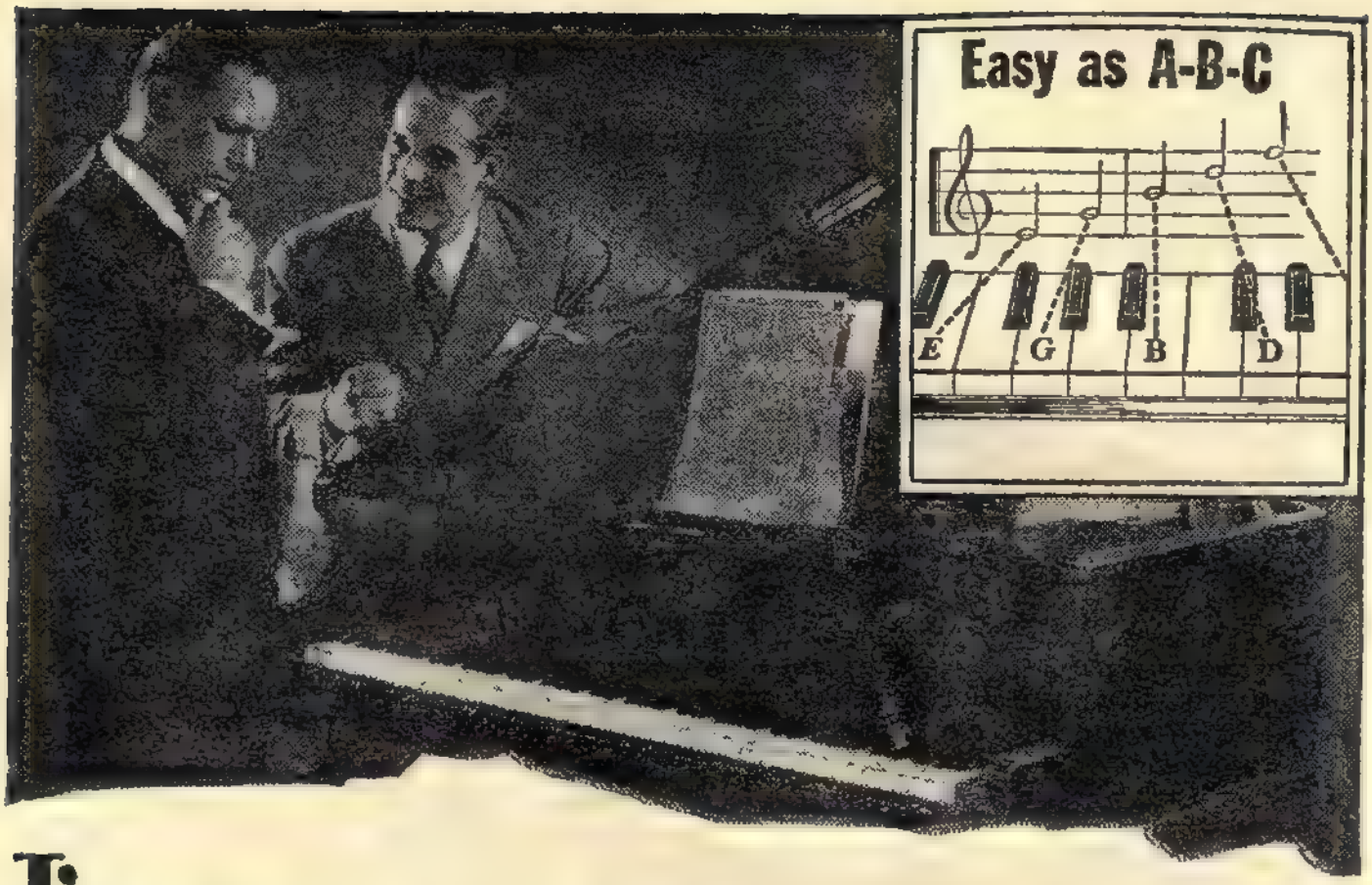
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PROTOPLASMIC STATION

A Series of Invasions by Insects Menace Humanity—and then an Era of Stark Disaster Looms!

By PAUL ERNST

Author of "The Microscopic Giants," "Death Dives Deep," etc.

There had been hundreds of men in the room, now there were only shapeless mounds

Europa and Pacifica, Two Mighty Nations,

CHAPTER I

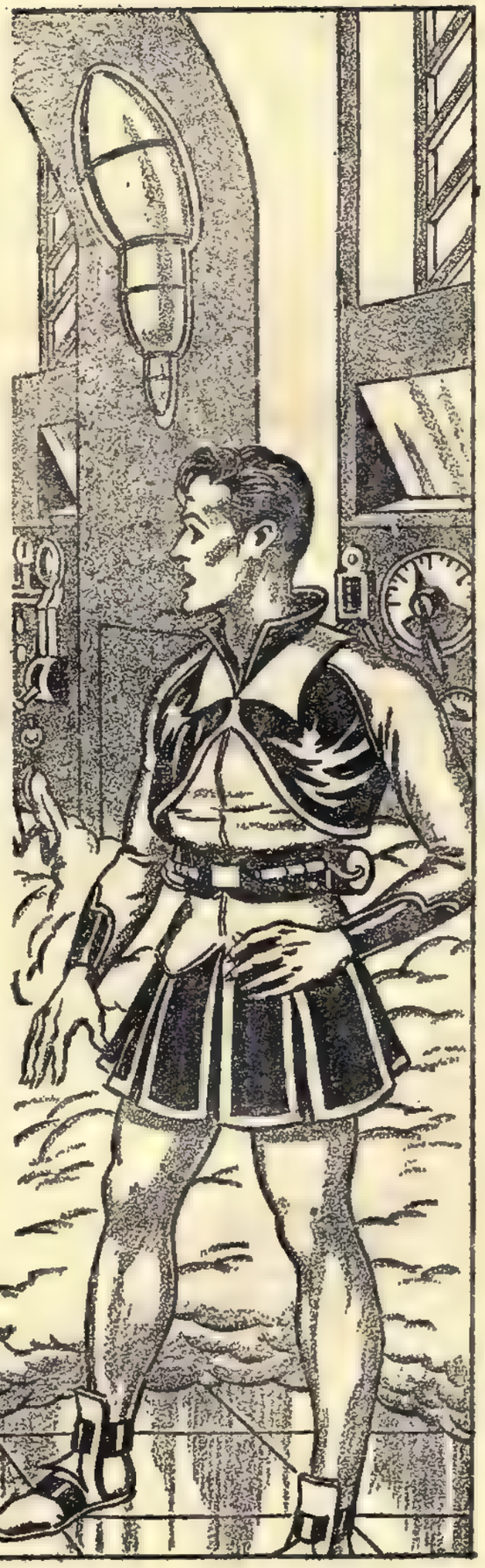
The Insect Invasion

LEE CASS leaned on the edge of the magnesium rail and stared through the blued quartz panels at the world three-quarters of a mile below. It was dusk, but even in that half-light it was necessary to peer down through blued quartz if you wanted to save your eyesight.

A panorama as startling as it was bleak spread out from the mile-high observation tower.

For two hundred miles in every direction the earth was paved with glass. Millions of glass, convex power-bars a foot wide by six feet long glittered and burned in the dying sunlight. Under each bar was a water pipe. In each pipe water was converted into steam by the sun's rays concentrated through the lenslike power bars. Each pipe hissed its vaporous load into the central generating plant where electric power in almost immeasurable quantities was produced.

Threading through the millions of bars, now automatically tilted westward to catch hungrily the last rays of



A Complete Novelette of Future Warfare

Struggle for the Key to World Supremacy

the setting sun, were radiating vitrolite tubes twenty feet in diameter. The mammoth tubes were like the spokes of a wheel, raying out from a vitrolite reservoir fifty stories high and a mile square. Tubes and solidly roofed reservoir were white with perpetual frost.

Lee Cass shook his head in the philosophical wonderment that often seized him when he looked out over this weird landscape.

All this mighty engineering, scientific and biological machinery, for what? The warfare against insects! Battle against organisms for the most part too small to be seen by the naked eye!

It had been a hundred years ago, in 2214, that the blind and brainless denizens of the insect world had finally tipped the scales in their age-long fight against humankind. Before that, since the first of the twentieth century, they had been gradually winning more and more territory.

At that time the first of international food-trading had begun. Fruits and vegetables were shipped from every land on the globe to every other land. With them went each country's worst insect pests. Japan sent her beetles to the rest of the world. America sent her smut-rust and boll weevils. A thousand food plagues, taking new and more vigorous root in alien territories, had begun to sap at humanity's very existence.

For decades men held their own by desperate poisoning and burning and spraying. Then, in the twenty-first century, these methods began to fall before the tremendous fecundity of insect life.

REGION after region was abandoned by a starving populace as vegetable and animal foods were devoured by insect parasites. Each region, on being left, was made desert by thousands of tons of poisonous chemicals strewed over the barren earth in a hopeless attempt to annihilate the insect hordes remaining in power over the land.

In the year 2200, humanity's plight was desperate indeed. Thousands starving in remote areas, became starving millions, infected by body parasites, living in stone or concrete huts so that termites would not devour their very homes. It was conceded at last that mankind was beaten by insects. The last remnants of the human race would die out for lack of food in less than a century if something couldn't be done.

Something was done.

Verniez, the great biologist, isolated protoplasm and found methods of nurturing it in special beef extract cultures. He went to Geneva, to the League of Nations, with a bowl of the stuff.

Like faintly milk-streaked jelly, it was. A dipperful of almost colorless, sluggish fluid in which lay the hope of humanity's salvation.

"I want half a billion dollars for research work," he said. "I want a generating plant a hundred times bigger than anything ever seen on Earth before. I want power to cause any territory to be evacuated that I decide should be deserted. I'll show you gentlemen how to fight insects!"

The nations were faced with cooperation or destruction. Reluctantly, they cooperated.

This territory in the heart of the Great American Desert was given to him. The region, former midwestern states of North and South Dakota, Nebraska, Oklahoma, parts of Wyoming and Colorado and Montana, had once been fertile. Now it was bleak and lifeless, made so by the soil erosion and dust storms of centuries past.

The mammoth power plant was built in the desert to his specifications. Then the great reservoir which was to be filled with his mysterious protoplasmic substance. No one knew just what it could do. The world soon found out!

Illinois was a barren region. In Chicago and a few of the larger towns a meager few thousand people still dwelt, gaunt and starving specters. For the rest, the state was given over to insect pests. Insects whose countless billions darkened the skies in flight, and made sections of the

ground look as though covered by a moving carpet! They warred on and devoured each other. They fought over the last pitiful remnants of plant life. They possessed the area.

Verniez ordered all Illinois evacuated. Around its boundaries he laid a copper grid track, itself costing most of the half billion dollars. Into the grid he poured all the electric energy generated by his mammoth station.

Then he loosed in the electricity bounded territory all the protoplasm he had produced by day and night work of a thousand trained men.

The world waited—and wondered. Then, from dozens of sneering, doubting rival biologists who camped out in that proscribed area to watch Verniez's colossal failure, incredible reports began to come.

They saw what stuff that raw protoplasm was!

Poured like slow-running jelly from great tank cars, it had started at once after all insect and animal life. And as it pursued, it acted almost as though possessed of a sort of blind intelligence of its own.

THE stuff was formed of countless units of single-celled life, amoeboid in character but without traces of perceptible nuclei. Primitive, raw life stuff never before existing in pure form, it flowed sluggishly but ravenously after everything living outside of the vegetable kingdom. And as it flowed, it adapted itself to each type of pursuit.

Some of the stuff seeped into the ground in almost sub-microscopic globules, and absorbed all soil that bacteria encountered. When earthworms and larger forms of life were come upon, the protoplasmic jelly budded, cell by cell, and built up rapidly to the size necessary for the larger absorption.

Above the surface of the soil, the grim primal ooze flowed slowly up dead tree trunks or the stalks of weeds and plants. All plant parasites encountered were devoured by larger or smaller blobs of the stuff according to their size.

Rats and mice were trapped by slow-moving rings of protoplasm. Flies, mosquitoes, beetles, larvae of all kind, ants—everything was absorbed by the blanketing jelly. There were even reports that things as large as stray dogs were attacked and devoured by shapeless masses of the stuff built up on itself and adapted to absorb creatures of that size. These were disbelieved at first; but later it was known that the protoplasm could bud and grow and adhere to itself in lumps large enough to digest horses or cows, if such presented themselves in its ravenous path.

Fleeing things that tried to get out of the proscribed territory encountered invisible walls of force radiating from Verniez's copper grid track, which formed a barrier extending up into the air for nearly a mile and down into the earth for over thirty feet. An intangible but impenetrable wall of force!

At the end of a month the world doubted no more. It believed that Verniez had the answer to man's war for existence against the insect kingdom—and it shuddered at the enormous, blind ferocity and power of the life stuff he had isolated and caused to grow.

At the end of a month no form of life but plants existed in Illinois. No bacteria, no insects, no rodents, nothing. There was only the protoplasm, existing but to feed, now quiescent and torpid since there was nothing left to feed on.

Verniez concentrated the stuff in a pool in the center of the state by narrowing the enclosing circle of walling force. Driven by electric whips into one spot, the jelly was collected and removed to its reservoir in the Great American Desert again.

But whereas Verniez had transported it here in twenty-four hundred tank cars, it took a hundred and eighty thousand cars to get it back again. So had it swollen and flourished on the life it had consumed.

A State stripped of all animal and insect life! It couldn't be left that way, of course. Leaves and weed stalks falling, remained obdurate and

unchanged where they fell. There were no bacteria to break them up and decompose them into the necessary mold for fertilization of the soil. There were no earthworms to enrich the land; none of the beneficial forms of small life to which man owed his existence as surely as he anticipated his destruction from the malignant forms.

Verniez had anticipated that, of course. The cleansed area, remaining cleansed because it was permanently enclosed by the grid track which kept all life out save man himself, who could go through insulated gateways at stated intervals, was stocked anew with cultures of favorable bacteria and the necessary insect forms.

And a state was reclaimed! Thousands of square miles, highly important to a race possessing tragically little land surface where humans could beat insects in a race to harvest crops, were made fertile and abundant again. And Verniez was given whatever he wanted by a chorus of nations that could not praise him highly enough. . . .

LEE CASS took a final look through the blued quartz panel at the square miles of glass beneath the tower, with its giant vitrolite tubes radiating out of sight in all directions.

Forty years ago this, the final flower of Protoplasmic Stations, had been erected. Sun power-bars had been installed to generate the power no amount of coal and oil could generate. The vast reservoir beneath his feet, and the tubes radiating from it, were erected to contain the central supply of protoplasm. Now scientists following in Verniez's footsteps could cleanse the insects from half a continent at a time, with designated areas blocked off from egress or ingress by turning the sun-generated power into various permanent grid systems. Each of the radiating tubes went, through mountains and under oceans, to a plotted area of the earth's surface.

Any area where insects had again reached perilous numbers was segregated, evacuated by humans and animals, and exposed to the ravages of the protoplasm by the simple expedient of opening the vitrolite tube extending into that area. Then the refrigerating coils were allowed to warm, the protoplasm in that tube lost its cold-induced torpor and flowed from its prison and from the reservoir behind it.

Cass shivered a little, though the glass-encased tower was warm.

The protoplasm resting inactive in reservoir and tubes was ghastly stuff! Only scientists trained in the work from childhood could handle it. Unleashed, it devoured by ruthless absorption all life within its range including human life! Only by keeping the raw, terrible jelly refrigerated to a temperature where vitality was low, with great ammonia coils, could it be contained safely. It had the power of secreting some sort of acid which, when it was specially active, could actually erode vitrolite itself!

Ghastly stuff, mused Cass, turning away from the quartz panel that protected eyesight against the unbearable glitter of the glass power-bars. Yet it stood as mankind's greatest blessing, preventing the human race from being wiped out of existence by the fertile insect world.

He strode toward the control room, to throw the great switch that kept the generators turning on power from miles of night batteries, to be used after sunset. Persia and Australia were being cleared of stubborn insect life at the moment. Power must flow from the blocking track grids to keep the protoplasm from escaping into ocean or surrounding country. Terrible to contemplate what might happen if that stuff ever got out from under control!

Cass stopped as his hand reached to open the control room door. Around the curve of the tower a man came swiftly, white of face, panting. His high forehead was wrinkled, and his deep-set eyes were staring. His hands, twitching with the nervous ailment contracted from being protected from the protoplasm for many

years by body-encasing shells of the super-generated force, were clenched.

"Lon!" said Cass, staring at the agitated form of Longi Fiorenze, senior chemist of the afternoon watch. "What on earth is the matter?"

"I don't know," said Fiorenze, his breath coming gaspingly. "But I think it's the worst. Come down to the observation board, after you've thrown the night switch, and tell me what you think it all means."

CHAPTER II

The Protoplasmic Doom

THE two men swung rapidly into the observation room with their short white tunics, somewhat like the ancient Scottish kilts, swishing at their sun-tanned knees.

The observation room was a small chamber with a domed ceiling, like the inside of a hollow half globe. Dome and circular walls were blank and white. To this small room came cables that laced in insulated channels along the length of each of the radiating tubes.

Fiorenze snapped the wall switch and the room plunged into darkness.

"The Persian outlet first," he said tensely.

"What in the world do you expect to see there?" Cass objected. "Persia is deserted. The protoplasm's at work there."

"Wait and see."

Fiorenze's fingers found and turned the contact button closing the circuit of the Persian vitrolite tube. Thousands of miles away, at the top of the Persian outlet, a cluster of photo-electric cells like a mammoth fly's sent impulses along the connecting cable.

The observation room became a living, moving world, lit by pale grey. For it was grey dawn in Persia. On the domed ceiling the Persian sky showed. The circular wall became the Persian panorama around the tube outlet far away.

The two men gazed around then at a barren world. Sickly vegetation, almost entirely destroyed by mounting insect plagues, was grey-green on a rolling surface. A nearby stone hut showed bleak and empty. Not one animate thing showed.

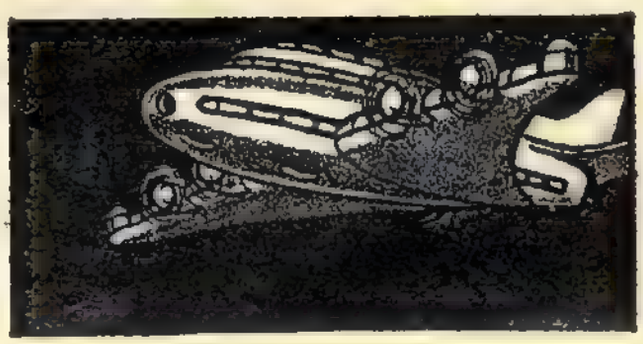
But it did show, in a moment!

Near the cell cluster at the Persian outlet there was a large ant hill. The two men saw it on the wall as a thing perhaps ten yards away from them. And there was movement on this mound!

A tip of the rising sun glistened dully on stuff that looked like colorless treacle, flowing sluggishly over the mound. It might almost have been water, save that it was as thick as jelly, and flowed up the ant hill.

The mound wasn't near enough for the two to see the dully glistening, viscous stuff devouring the ants. But they knew such was happening. It was the protoplasm performing its function. And here and there, at farther intervals, they could see what appeared to be small puddles, iridescent in the early sunlight. More of the raw life stuff.

"I still don't understand why you—" Cass began. Then he stopped. There had been movement on the globular ceiling. He stared up, and an exclamation came from his lips.



A great airliner showed there, in the Persian sky. It was a big new freighter, but its speed and buoyancy indicated that it was nearly empty. It sped to a point near the outlet, and stopped, with fins turning slowly to anchor it in one spot.

Its lower freight entrance opened, forming a square black hole in its fishlike belly. A landing platform was lowered. Onto it clambered a tiny figure—a man.

"My God, they're not going to try

to land down there, are they?" Cass said.

FIORENZE said nothing. His breathing rasped loudly in the confined space as he watched.

The landing platform sped down from the freighter. It stopped and the stage swung slowly in air about ten feet from the ground, almost directly over one of the heaving, oily puddles of protoplasm.

The man could be seen plainly enough now for the two to see that he held a large vitrolite container in his hands. They could see his face, white, desperate, but resolved. The stage went on down, touched the earth. The man got off.

He stepped the few feet between stage and protoplasm pool. The vitrolite container was extended forward with its lid off. He looked like a man about to draw a bucket of water from a well. Only this was not water in front of him. It was the most fearsome, indestructible, dangerous stuff known.

"The fool!" breathed Cass, white-lipped. "Oh, the fool!"

He twisted his hands in important agony as, helpless to prevent, he watched the man, brave with the bravery of half ignorance, bend over the puddle with his vitrolite container.

"What would he do with the stuff if he could live to dish it up?" Cass rasped. "Doesn't he know that a cupful of it, out from under control, could cover the earth in a year?"

Fiorenze's only reply was a tortured gasp. And Cass's own voice joined it.

"Behind you!" he shouted, as though the man could hear over the thousands of miles of distance. "Run for the landing platform!"

The man from the mysterious freighter was bending gingerly over the puddle. He had his container dipped into the protoplasm, and was drawing it forward to fill the thing. Meanwhile he was stepping slowly back as the puddle flowed with slow viciousness toward him. He did not see the moving pool behind him.

From thirty yards away the pool had started the instant the man had landed. It rolled slowly toward him now. And as it moved it reared up like a slow motion picture of a wave. It reared higher, drew up into itself, gathered globules of protoplasm from the earth around, till it was a swaying column of jelly ten feet high.

The man had his container full of the stuff now. Keeping it at arm's length, as though it were deadly explosive that would be set off by contact with his body, he turned to move toward the landing stage.

It was just as he turned that the leaning column of watery terror toppled forward on him.

Cass groaned as he saw the doomed man's lips writhe in a scream. He wanted to avert his eyes from the inevitable end of the man's rashness, but could not.

The protoplasm closed over him. He tore great blobs of it off. It plopped to the ground, flowed toward him again. He worked his arms like pistons. His fists beat through the viscous stuff that covered him like a six-inch film of oil. But as fast as holes were made in it, they closed again.

The protoplasm from the vitrolite container, lying on its side nearby, joined the rest in a single shapeless mass that was already absorbing the body of the doomed man.

The man fell, legs bound together as if with glue. He writhed and fought the core of a sheath of living, limpid life. For a long time he squirmed and tossed, then he was still. The deadly protoplasm thickened over him.

In less than five minutes he existed no more. The protoplasm opened now and then and a garment dropped cleanly out. Boots were absorbed, for they were of leather. The rest of his clothes were not touched; evidently they were of cotton.

SEVERAL puddles moved slowly away from the crumpled, pathetic heap of clothing on the ground.

Cass drew a long, quivering breath, and looked at Fiorenze in the light of

the Persian early morning sun.

"He committed suicide. But why?"

"Look at this and see if it tells you anything," the older man said.

He flipped the contact button on the Siberian cable. Instantly the domed ceiling which was the "sky" was darkened by winged shapes: enormous, fast-flying, stub-winged planes.

"War planes!" grated Cass.

"Exactly," said Fiorenze.

He contacted the cells on the end of the English vitrolite tube. Here, too, the sky was darkened by planes; but here there were two sets of them, fighting in night darkness, revealing themselves in great flares of light as explosives burst and made night into day. On the ground were enormous tanks, and the new war towers, eighty yards high and pouring gas and liquid fire streams from every loophole. Writhing bodies dotted the ground as men died with their lungs eaten out and their arms and legs burned away.

In France the scene was the same. In Japan it was worse. They saw a fleet of war planes nearing New York City; saw the first disease bombs dropping.

"World war!" rasped Cass. "Begun without notice, reaching all over the globe in a few hours, as happened forty years ago when civilization was almost wiped out. But there will be no 'almost' about it this time! Civilization dies if this one continues."

Fiorenze peered at him, frightened eyes luminous in the dimness of the observation room.

"And the madman who tried to get a container full of protoplasm from the Persian fields?"

Cass drew a deep breath.

"I think we both know the meaning of that attempt. War! It has been coming for a long time. And for a long time I have been expecting a warlike dictator to realize what is the most terrible force it would be possible to utilize against enemy nations."

The two stared at each other.

"The protoplasm," quavered Fiorenze.

"The protoplasm!" nodded Cass. "Indestructible! Not to be stopped save by the force lines. You can shoot it to bits, and it reassembles. You can spray it with fire and it devours its own charred portions and comes on. Gas, poison, disease germs are futile against it. The man who loosed that force into enemy territory would have his opponent begging for peace terms in a week. That's why the heroic lunatic we saw in Persia acted as he did. He was trying to get some of the protoplasm and take it to enemy territory. Did you recognize the freighter that lowered him?"

"Faintly. I think it was Europan."

"Right. And the planes over France and England had the emblem of the new day on them. It's East against West, the nation of Europa against the nation of Pacifica, with all the world as a battle stage. They hit New York at"—he glanced at his watch—"eight minutes past seven. New York is two thousand miles away. They can be here in about two and a half hours—"

He strode to a bank of transmitters near the observation control board. He touched a key.

"Reservoir? Cass. Wire the refrigerator controls to a temporary, auxiliary master-switch in the low level generating plant. Meanwhile, lower the refrigeration temperature another eight degrees to keep that living soup of yours still more quiet. After that, stand by your receiver for emergency orders."

He touched another key.

"Outposts, power-bar field? Listen, all of you. Set your track grid connections to handle a quadruple force load. Lock your amplifiers to the On peg. Then come in at once as fast as your 'copters will bring you. Cass speaking."

One more key was pressed by the young Day Executive of the Protoplasmic Station.

"Armory? Cass talking. Take stations at all radion guns. Pass out weapons to all the men. We're going to be attacked in a little over two hours. See that we're ready for it."

Fiorenze clutched at the younger man's arm.

"Attacked?" he faltered.

"Of course," snapped Cass. "The bone of contention in this war will be the Protoplasmic Station. Already we have seen Europa trying to get raw protoplasm from a pest area in a vitrolite bucket. Probably Pacifica has made, or is making the same effort. But no man can obtain any of the stuff unprotected. So it's inevitable that either side, or both, will try to take the Protoplasmic Station and send out the stuff in quantity, with safety to themselves, to enemy territory. Almost certainly that fleet we saw approach New York is on its way here. The United States is neutral in the East-West feud. The only thing we have that either could want would be this station. And God help all concerned," he added huskily, "if they get it!"

CHAPTER III

Control of the Station

FAR out at the eastern edge of the power-bar fields, the local station amplifiers, opened to full On, caught the faint drone of many far-off war planes. Along the sound wave channels they picked up the image of the planes and transmitted them to the observation rooms.

"Pacifica," said Cass, staring at the room's domed ceiling. "Each plane is marked with the emblem of the Orient."

He turned the volume control at the board. The sky scene enlarged, concentrated on the flagship of the air fleet. Still the scene enlarged as Cass's fingers moved. There was a glass-enclosed navigating bridge on the front of the giant plane. Behind this could be seen a man, and finally, as the enlarging went on, a distorted glimpse of his face behind glass.

As the image gained in size, it lost in clarity, just as did old-fashioned, enlarged photographs. But the face was still clear enough for recognition.

The man on the bridge of the flagship was known to most of the billions on Earth's surface.

"Draki, Minister of War of Pacifica!" said Cass, drawing in his breath.

As though mention of his name had drawn him, Draki's eagle-beaked countenance turned toward theirs. It was as though he had heard their conversational tone over the drone of his planes hundreds of miles away. His arrogant black eyes seemed to seek theirs.

Then the two saw that he was staring at a control board on the bridge much like theirs in the observation room. He had chanced to look their way just as they were gazing in his, that was all.

His lips moved, and his words told that he had reversed their transmitting beam, allowed sight and sound of them to reach the plate on his board as sound and sight of him were recorded in their room.

"You!" he said to Cass. "The big fellow with the black hair! What's your name?"

Cass's nostrils whitened with anger at the arrogant tone used, but he said coolly: "I'm Lee Cass, Day Executive of the Protoplasmic Station. What do you want?"

"I want you to stand by for orders."

"Orders?" said Cass slowly. "This Station takes no orders. It is international, as you know. It is dedicated to the service of all the world, for the preservation of the human race. No outside man or country can command us here."

Draki laughed. The sound was harsh, bleak.

"Your Station will soon be international no longer. Just as the world will be no longer international. Pacifica shall take your Station as it shall take the world. Europa began an unjustified war against us six hours ago. We are a peaceful nation, but what they have begun, we shall finish. In striking back, we shall not stop till we have conquered Earth. But to do that with a minimum amount of slaughter, we need the Protoplasmic Station."

"I don't understand," evaded Cass, who understood only too well.

Draki's lips hardened till they looked like lines in stone.

"With your Station as our head-

quarters," he grated, "we can send an ultimatum to Europa that if it does not surrender at once all vitrolite tubes leading into the continent will be opened, power turned through the track grids bounding it, and protoplasm poured into the force-barricaded area till every man, woman and child is devoured along with animals and insects! And that, my dear Cass, will avoid bloodshed, as I said. Surrender will be immediate, I think."

CASS'S eyes bored into Draki's over the beam bridging the hundreds of miles between their actual bodies.

"If Europa got the Protoplasmic Station, and gave you the same ultimatum, would you surrender?"

"Of course," said Draki, avoiding the searching eyes.

"You would not," said Cass quietly. "Not, at least, till millions had died. Patriotism. There is no logic in war. No commander ever surrenders until the masses he leads have been so thinned by death that even that commander recognizes defeat as inevitable."

Draki's face twisted with cold anger.

"Enough of this. I invite you to join Pacifica, the winning side, and turn over your Station to my commands. If you do not, I shall simply seize the Station."

Cass's smile was glacial.

"How?" he challenged.

"We shall merely fly in above your force barriers and—"

"Your planes will have to rise to a ten-mile height to pass over the force lines if we put a quadruple load through the track grids," Cass interrupted calmly. "From that height you could not possibly bomb us effectively. Meanwhile you will be exposed to our radion guns. And if you attempt to drop men, they will land in raw protoplasm which we will release from the reservoir."

Draki's face was white with rage.

"You will be very sorry that you offered resistance to me! I tried to give you a chance, and you—"

Calmly Cass cut him off. Fiorenze nodded toward the board. The signal on the telebeam outlet from the London Exchange was winking on and off. Cass cut in.

On the wall beside the board formed the visage of the President of Europa, white-bearded Lochman Reynolds.

"Protoplasmic Station?" Reynolds said crisply. "Whom have I the honor of addressing?"

"Lee Cass, Day Executive."

"Cass, I am communicating with you on a matter of the utmost importance. Pacifica has just declared war against Europa in a grossly unfair and unjustified manner. Europa does not want war. It wants peace. But since Pacifica has forced us to fight, we feel that the human race will be best served if we can end the war as swiftly as possible. Therefore I would like—"

"I know," nodded Cass. "You'd like control of the Protoplasmic Station."

"I see you have already considered our request. May we take over at once?"

"You may not take over at all."

"Eh?" said Reynolds.

"You're second-hand in your request," Cass said. "Pacifica asked the same thing just a few minutes ago, in fact were quite insistent about it."

"Good God! You're not going to—"

"We're not going to give control to Pacifica—or to you!" snapped Cass. "Your eagerness to serve humanity by winning as swiftly as possible is touching. But it doesn't mean anything. Your plans are substantially the same as Pacifica's: You want world rule, and you don't give a damn how you get it, or how many millions of people must be killed to satisfy your ambitions. But both of you can count us out! No one gets this Station!"

"We'll get it," said Reynolds, his face ashen with anger, "if we have to come with every battle plane we've got—"

"You'd better hurry, if that's your idea. Pacifica's fleet is in sight now, to the east."

"What? Why didn't you tell—"

Lochman Reynolds's image faded

from the wall, with a last glimpse of him frantically pressing call buttons on his control board as he cut off the station.

CASS turned to Fiorenze.

"What we need is not an insect exterminator, but something to remove from the brains of the ruling classes the persistent idea each has that he alone would be the best possible ruler over all the peoples of Earth. Call a war conference in the armory at once."

The door of the observation room opened to admit a man just as Fiorenze hurried out. The man was stocky, authoritative-looking, about fifty, with cold blue eyes and a somewhat ruthless jawline. This was Alexander Bridgman, Night Executive of the Station, next in power under Cass himself.

Cass acquainted him with all that happened on their way to the armory. Bridgman said: "Maybe we'd better undertake to end this war ourselves."

"How?" said Cass.

"If we blocked off Pacifica and Europa with the track grids, and threatened both with protoplasmic extinction, they'd come to terms soon enough."

Cass shook his head.

"I thought of that. You know what would happen? The dictators of both countries would simply close off all news sources to the common people that would ordinarily tell them of their danger. They would dare us to try our plan. And—we couldn't accept the challenge! At least I, for one, don't care to have the lives of millions on my hands, as I would have if the tubes were opened to pour protoplasm into two nations ignorant of what was being done."

"It might serve them right," Bridgman said harshly. "Warlike, stupid, human mites! Scarcely saved from extermination by insects when they want to seize the force that saved them and slaughter millions of fellow humans with it!"

Cass looked curiously at the older man. A cold, queer person, this second in command!

"It's out of the question. All we can do is somehow keep this Station from passing into national control."

The two entered the armory.

This was a great room on the top floor of the enormous, windowless building under the observation tower. Under it rested in ominous quiescence the uncountable gallons of protoplasm which filled the reservoir. Raw, savage life stuff which had been gathered here by greatly daring man, but which knew no master if turned loose uncontrolled!

The several thousand men of the Station were in the room. They turned to Cass respectfully as he mounted the platform that was like a stage at the end of the hall.

"Men," Cass began without preamble, "the world is at war. Pacifica against Europa, with all other nations but ours joining with one side or the other. Both want control of this Station, because control would mean frightful doom for the enemy and victory for itself. We must prevent such control if it means our deaths to the last man."

He stopped for a moment. A faint drone filled the room. It came from above: the angry buzzing of countless Pacifican battle planes high above the Station, above the force barrier shot upward by the close-set system of grids around the reservoir, and on its roof.

"There is the first of the enemy," he went on. "The war planes of Pacifica. They cannot come closer to us than the ten miles or more commanded by the force fields. The only thing they can do is try to bomb us at long range. This they will probably attempt. They may damage the reservoir or a tube, and some of the protoplasm may escape. Therefore, all will take electrodes, as they are passed out now, and go to emergency stations outside the reservoir walls. If breaches are formed, you will drive the protoplasm back with temporary grid tracks, being protected yourselves by the aura of force formed around you as the current passes from negative to positive electrodes strapped in your belts. You will repair the breaches and—"

HE stopped, and listened.

The drone of the planes above seemed louder, as though the warships had lowered. But this was impossible, of course! The force barricade radiating up from the grid tracks would hurl a plane back as if that plane had run into stone; would probably wreck it before the pilot could regain control of his battered ship.

He went on: "I have ordered the refrigeration temperature lowered so that the protoplasm won't move too swiftly through possible breaches. You should have time to barricade holes pretty strongly before—"

Once more he stopped. And now the head of every man in the great room turned upward as his did.

The drone of the planes was very close! It sounded right overhead. That noise wasn't coming from ten miles up. It was coming from an altitude of, at most, two or three! Impossible for the planes to break down through the force barriers—but somehow they had!

"Something is wrong!" Cass snapped. "Every one—to the radion guns!"

That would stop the planes. The radion guns, emitting a new form of polarized heat that passed frictionlessly through air to strike with full force on the first material object it touched, would send the planes down in flames.

The armory door burst open. A man staggered in. Blood was pouring down his face, and his eyes were sick with terror and physical injury. Cass recognized him as the night engineer.

"Reporting, sir," he faltered. "The power line is damaged."

Cass sprang from the platform, clutched his arm. "What are you talking about?"

"There's a traitor among us, sir. Five minutes ago, as I was inspecting the main power cable between the night batteries and the central track grid board, I was slugged from behind. I saw nothing, didn't come to till a moment ago. When I did regain consciousness, I saw that ten feet of the main cable had been cut, and had been consumed by a deliberately contrived short circuit!"

A concerted groan came from the men in the armory. That cable was six feet in diameter, not counting the yard-thick insulation. Hours would be required for the casting and insulating of a length to take its place.

"Then there's no force field to stop the Pacifican planes," grated Cass. "Damn them! The radion guns! We'll—"

He stopped, realizing suddenly that the guns depended on the power carried by that ruined cable. They were helpless here—two thousand men against the scores of thousands in the planes, which were even now beginning to land on the reservoir roof.

CHAPTER IV

The Bloodless Menace

IN the observation room, Draki faced Lee Cass. Around the walls of the little chamber were packed a score of men of Pacifica, clad in the magnesium-alloy chain mail that was war's only defense against the new bullets—glass pellets of deadly Gonite that exploded on impact and blew a body to bits.

"I should kill you instantly for your resistance," Draki snarled to Cass, bold black eyes bloodshot. "But I need you to run the Station now that Pacifica rules the world."

"Pacifica doesn't rule it yet," retorted Cass.

Draki shrugged. "It's only a matter of hours. As soon as we get the power cable repaired, and can begin sending protoplasm into Europa."

"You're actually going to do that?" said Cass, fingers trembling. "You'd expose the millions there to that devouring, indestructible force?"

Draki shrugged again.

"They'll surrender before too many millions are killed. Then we'll drive out the protoplasm, and take over." He stared in contempt at Cass's horror-stricken face. "The trouble with you scientists is that you lack imagi-

nation. Why, you personally, could have ruled the world at any time you chose, with the weapon of this protoplasm under you! The first threat would have brought all nations under your power. Yes, you lack imagination. And nerve, if you know what I mean."

Draki turned to the leader of the men in the room.

"Lock him up." He gestured to Cass. "And see that there's no chance for him to escape. The others of the Station?"

"They're confined in the armory, sir," the man replied. "There's no possible chance for them to break loose."

Draki nodded. "After you're through with Cass, go to the generating rooms. Speed work on that cable repair. The last report I had from our Atlantic outposts was that the Europa battle fleet will be here in about two hours. We must have the force barricade in working order to repel them."

The man saluted and left. After him filed his men, with Cass. The last glimpse of Draki the Day Executive had was of his saturnine face as he cut in on the London Exchange to give his ultimatum to Reynolds: The surrender of Europa, or the annihilation of their people.

In his cell, alone, Cass paced feverishly back and forth and gnawed at the backs of his hands. Draki had declared that scientists had no imagination; but Cass had plenty with which to vision what would happen in Europa when that power cable was repaired.

The great nation, a coalition of all the former European nations, cut off from the world by the force barrier raying from the surrounding grid track! Protoplasm pouring into it from the vitrolite tubes! Horrible, jellylike stuff rolling sluggishly over humans and beasts—all animal life! Men, women and children fighting futilely with the smothering, devouring stuff that covered them like a viscous shroud, and which reddened faintly as it absorbed their blood and bone and flesh!

Strangled curses came from his white lips as he paced his cell.

The cell was as effective as it was fiendishly simple.

CASS had been placed in one of the elevators that sped from ground to top of the mile-high observation tower. The cage controls had been disconnected, and the elevator run halfway up the tower. There Cass paced now, half a mile from the ground; half a mile from the top platform. Around him was the impenetrable magnesium wall of the thirty-foot elevator.

Also around him were massive metal supports which held the tower upright against the thrust of the desert gales. No chance to get out. None! No chance to go up or down. Meanwhile, the repair of the cable was rapidly being accomplished, with the fate of Europa's millions to be decided within the next half hour!

Cass stopped his pacing, and also the hopelessness of his train of thought. He was chief executive here, wasn't he? He had each line of every blueprint of the design of the entire station in his mind, didn't he? Then he ought to be able to figure a way out of this mess—and also a way to circumvent Draki.

He went to the elevator's control switch. The entire control mechanism had been removed; but there were the two stub ends of the power cables. Cass's breath hissed between his teeth as he saw a way out.

Over the cut ends of the cables was hastily wound rubber tape to guard against a short circuit. Feverishly Cass unwound this, with the cable ends rayed apart for the moment. He tied tape to each conduit, took more of the tape to wrap around his feet. Then he retreated to the far corner of the cage, with the tape in his hands like reins.

For a moment he hesitated, standing on his impromptu rubber insulation pads. Then, with a quick breath, he twitched the tapes and brought the bare ends of the cable together.

There was a flash that dazzled even through closed lids; a smell of burn-

ing ozone. He was knocked from his feet and lost consciousness for an instant. But when he struggled up again—the entire corner of the elevator cage was gone, burned out by the short circuit.

He staggered to the ragged opening and looked down.

Half a mile beneath him was the bottom of the shaft. He swayed dizzily at the tremendous, sheer drop. But also beneath him, going down and down like an interminable metal ladder, was a secondary support beam, laced across and across with welded diagonal brace-bars!

With a prayer on his lips, Cass swung onto this and began climbing down.

It was at the roof level of the mighty reservoir that Cass heard again a drone of many battle planes in the air over the station. But this drone remained faint and far above.

The fleet of Europa had come, dispatched by Reynolds when Cass had told him of the presence of Pacifica's fleet over the Station. But it was not coming down. Evidently the power cable had now been repaired, and the force barriers were at work, keeping Europa's planes at a ten-mile altitude where they had failed to keep Pacifica's planes.

Cass crawled precariously from the laced beam to a point where he could see through the glass tower wall between two huge supports. He looked up.

FAR above, here and there glowed furious pinpoints of light, which became falling meteors that died out as they neared the ground. The radion guns of the reservoir roof were working, manned by Pacificans. Europa's planes were being burned down, penetrating the force field as solid fragments where they could not do so as intact, less dense containers of men and ammunition.

Cass crawled back to the beam and went on down.

Cass's goal was the low level generating room, but he knew he could not get out the shaft door there. The door, built to withstand the terrific pressure of the air cushion formed at the bottom of the shaft by the rapidly descending elevator, was too massive and too well barred to be opened by anything less than the full power of the elevator motor; and he had no elevator motor at his disposal.

He crawled from the beam to the ledge of the next to the last sublevel, the level in which were the control boards of the complicated central power exchange of the track grid system. He slid open the shaft door on the inside catch for a half inch, and peered out.

The great subterranean room was filled with Pacificans. They were tense with suppressed excitement—and triumph. They were all looking one way: toward the banked control boards. Cass's nostrils went white as he looked in the same direction.

Draki was there. He was looking at the electric chronometer on the wall.

". . . eight and a half minutes, if Reynolds doesn't surrender," Cass caught some of his words across the taut hush of the room.

Cass paled as he got the significance of it. In eight and a half minutes, protoplasm would be poured into Europa unless Reynolds bowed the knee to Pacifica. And this was a thing which, with the bravery of leaders whose own persons are not in danger anyhow, he would assuredly refuse to do till his nation had been decimated.

Cass stared around the underground room. All the men in it were gazing toward their leader. But still he knew it would be impossible for him to make his way among them to the stair door twenty yards from the shaft. His knee-length tunic was too different from their chain-mail uniforms. No matter how absorbed their attention was, the men would spot him instantly.

Again all seemed hopeless. But Cass was inspired by the horrible picture of millions of men, women and children fighting feebly against the awful fate he and Fiorenze had seen overtake the rash Europan in the Persian pest field.

A big Pacifican was standing next

to the shaft door. He was too intent on the control boards before him to see the door at his back slide open a little farther.

An arm vised around his throat. A hand from behind clamped over his mouth. A slight scuffling sounded out as he was dragged into the elevator shaft. But even the men closest did not hear, in their abstraction. Nor did they see the door slide soundlessly shut on pneumatic stops, and open again in a moment for a big man in Pacifican chain-mail and uniform to slide into the room.

At the bottom of the shaft lay the Pacifican, with his head smashed open against a metal girder.

KEEPING his head down, Cass began to edge his way among the tensely waiting men toward the stair doors. He had to reach those stairs to get to his final grim goal, the low level generator room.

"Six minutes," Draki called. His voice was as harsh as metal rasping on metal. There was no trace of emotion on his hawklike face. Europa was going to surrender—or perish.

Cass got within a step of the stair door. There, from his new angle of vision toward the control boards, he halted in amazement. For from there he could see a figure he had not been able to observe before: the figure of an elderly man in the short tunic of the Protoplasmic Station. Fiorenze!

The senior chemist's face was ghastly in its pallor. Trapped! thought Cass. He had been brought down here to be used for his technical knowledge, perhaps to be killed later—

Then the face of the man Cass would have trusted with his life, turned toward the stair door. His eyes widened as he saw Cass's face. Cass tried to give him a reassuring signal. Then his features froze as he realized an instant beforehand the incredible thing that was going to happen.

Fiorenze's hand raised and he pointed.

"That's Cass! There! Station Executive! He has escaped—get him!"

CHAPTER V

Cass's Ultimatum

FURY exploded in Cass's breast like a charge of Gonite. But his rage didn't keep him from moving, and moving fast. He got to the open door in one long leap. He whirled over the threshold, slammed the door and shot the bolts home, then darted down the stairs. Behind him many hands clamored at the door; but it was of metal and would hold for a while. He dismissed the peril of pursuit in his absorption on his next, and last, task. But in the back of his brain persisted his fury.

Fiorenze, senior chemist, the betrayer! He remembered now that in the armory Fiorenze had stayed near the door when he himself went to the platform. The man had gone silently out and down to wreck the power cable, and then had come back to the armory before the wounded engineer could report. He had been contacted by Draki, and had treachery in mind, at the moment when he had first come up to Cass on the tower platform with the news of the world fighting.

Cass raced into the low level generator room. He slid the massive bolts home on this stair door, too, and then ran for the glittering new switch, temporarily installed, that caught his eye on a board near number 4 generator. The auxiliary switch for the refrigerator controls which he had ordered installed here in the low level before Pacifica took over the Station!

Feverishly he snapped open the circuit. Around the reservoir the enormous refrigerating coils ceased to function. They would warm swiftly with the current shut off. In addition, the protoplasm was already warmed far above the danger point by the long stoppage of power caused by the treacherously impaired cable. The terrible stuff would burst forth in a carnivorous flood the moment it found a loop hole.

Cass proceeded to give it loopholes. With sweat beading his face at the grim necessity confronting him, he

leaped to a row of levers behind generator number 7. The levers were not rusty; nothing was rusty in this well-kept place. But they were obviously long unused. In fact, few at the Station even knew what they were for. But Cass knew! He had remembered them when he gave orders for an auxiliary refrigerator switch to be installed in just this spot, with just this possibility remotely in mind.

During the first regime of the Station, it, itself, had not been spared the attack of insect plagues. Termites had eaten all the wood in the place, and to some extent corroded glass and metal. Body parasites had made the crew's lives miserable. As the easiest way to clear out the pests, small passages had been drilled from the reservoir to each chamber in the Station. Through these passages protoplasm could be let into the place, a cleansing process now long since unnecessary. The passages were blocked off in each chamber by a metal door as thick as the door of a vault.

Wiping clammy sweat from his forehead, Cass pulled all the levers and locked them open.

The switch had stopped the refrigerating process that kept the protoplasm manageable; the levers opened doors to flood it into rooms filled with the armed men of Pacifica.

"God help them," Cass whispered. "And me! But it's better to kill thousands than to allow millions to be slaughtered."

IN the second sublevel, Draki's hand poised on the control that should pour protoplasm into Europa. Fiorenze watched that hand, moistened his lips as he thought of the consequences of the control's movement, but also thought avariciously of the huge bribe he had been promised to betray the Protoplasmic Station. Both had dismissed Cass from their minds: he was reported besieged in the low level, where he couldn't harm any one.

In the armory, on the top floor of the reservoir building, two thousand Station men glared helplessly at the Pacificans guarding them with Gonite coolness.

On the armory roof thousands of Pacificans were clustered around the blazing radion guns, which they only half understood, but which were unparalleled weapons even in the hands of novices.

Ten miles up from the roof the battle planes of Europa were wheeling and darting in an effort to stay clear of the deadly heat rays long enough to drop bombs.

War! Great nation against great nation. Titanic, clashing forces that submerged individuals to hopeless oblivion!

But in the low level was one man, calm though sweat still dewed his forehead, whom the mighty force of science had made greater than the sum of all the battle forces—

It happened that in the armory they saw it first.

A dozen Station men, herded near the inconspicuous door from armory to reservoir, saw that door swing wide on soundless hinges. They stared without knowledge of what it meant; all but one grizzled veteran who raised his voice in a sudden shout.

"Your electrodes! Everybody! Snap them into place and turn on the force current!"

The Pacifican guards warily leveled their Gonite guns at the shout, but saw nothing to alarm them, as the Station men instinctively obeyed the frantic order of the veteran. The Pacificans had examined the twin electrodes with which the Station men were equipped, and had recognized in them no offensive powers.

Bewilderedly but without alarm, they watched the Station men strap the twin electrodes to their belts and snap their contact buttons. Curiously they gazed as the men's faces convulsed with the first flow of current surrounding them like invisible auras, relaxed again, then twitched now and again as though all were sufferers from nervous tic. As long as they didn't try to rush them or break out of the Station, the Pacificans reasoned, they could do anything they liked.

On the roof, no one at all saw the four manholes, one at each corner, rise

into the night and lower again to the side, leaving four openings down to the heaving, stirring death in the vast black cavern of the reservoir.

In the second sublevel, it was Fiorenze the senior chemist, Fiorenze the traitor, who sounded the warning first. He didn't see the passage door open; but he glanced that way by chance just as Draki's hand was tensing for the move to flood Europe with destruction, and a scream tore from his lips as he saw the slow-moving, colorless puddle of jellylike stuff that was just rolling over the threshold.

Too late he recalled the long-unused levers in the low level where Cass had barricaded himself; too late he saw the connection between those and Cass's order to have an auxiliary refrigerator control switch set up down there.

"Get that door!" he screamed. "Shut it—"

A DOZEN Pacificans, spurred by the frenzy in his voice though they did not know why it was there, sprang to the metal door. They struggled to close it. But the door could have been broken from its massive hinges before it would close, for Cass had locked the levers open. And as they panted and struggled there to close the passage portal, the puddle of living slime at their feet thickened, swelled from behind, and began crawling up their legs.

On the reservoir roof, several hundred men ran hoarsely shouting with horror from a struggling mass which took up most of the roof's surface. That mass was composed of thousands of men, buried, overwhelmed by stuff like colorless molasses that clung adhesively in spite of all their frantic efforts to scrape it off. And as they struggled, more of the stuff heaved and boiled torpidly from the manhole openings.

In the armory, the Pacifican guards at last knew why the Station men had fastened the two innocent-looking rods to their belts. For in the armory a slow-moving river of protoplasm from the opened passage divided Pacificans from Station men—and rolled with sluggish inevitability toward the former.

At first a few Pacificans, quicker than the rest, had leaped the river and demanded from the nearest Station men, at the point of their guns, the electrode belts. The Station men had refused, preferring quick death to what would come if they gave up their force—shell protection.

The Pacificans could not physically attack the Station men because the force-shells threw them back. They could shoot them, and some did; but that was useless because the Gonite pellets blew the electrode equipment to fragments along with the Station men wearing them.

Now the river of protoplasm was too broad to leap; and the Pacificans could only fight and trample each other down to get out the single door—with most of them still not out when the protoplasmic flood reached them. Some of the protoplasm surged ravenously for the Station men, recoiled from the electric whips of the shells of force protecting them, and joined the rest in rolling, wave on wave, over the feebly struggling, slowly vanishing things that had been armed fighters.

Outside in the night sounded a thunderous roar. Half a thousand sun power-bars geysered up, with sand and rock, from a crater formed by a Europan bomb. The battle fleet, no longer harried by the radion guns, were setting out to bomb the Protoplasmic Station from existence rather than let Pacifica have it.

"My God," muttered Cass. "They'd see humanity's only bulwark against extinction by insect plagues go to pieces before they'd be ruled by another nation that wouldn't know what to do with them even if they conquered them!"

The words of the cool-blooded Bridgman recurred to him: "If the Protoplasmic Station were destroyed and human beings left to perish, "it might serve them right!"

But he shook this thought from his mind, and pushed the door levers back to Shut. They closed more slowly

than they had opened—pressing back tons of protoplasm surging along the passages to get at the food awaiting it in the Station. He went to the door, wading slowly through the hideous stuff, precariously walking down a lane formed by the raying force from his electrodes. He crowded his way up the stairs to the next level.

Even his iron nerve almost faltered at the sight awaiting him here.

THERE had been hundreds of men in the room, tensely watching for the move by which Draki was to conquer Europa. Now there were only shapeless mounds, mainly motionless, with crawling blankets of jelly over them. Cass saw Draki's face through a dreadful film, saw his wildly staring black eyes and eagle-beaked nose. He saw Fiorenze, engulfed to the head. The senior chemist had been out of the armory, wrecking the power cable at the time when the electrodes were being passed out.

He went on up to the ground floor. Everywhere silent, squirming death buried beneath squirming, silent life! Everywhere a knee-depth of the raw life stuff which had been Verniez's gift to the world, and which had come close to being its undoing!

White-faced and ghostlike, the only living man in view, protected by his force-shell, Cass waded to the nearest working elevator, and went up to the observation room.

His face showed, strained and sick looking, on the television plate in the armory. His eyes looked out on his men, mainly alive, with their bodies twitching from the surrounding current that protected them.

"The Station," he said huskily, "is regained. To your posts. Take temporary grid tracks and force the protoplasm back into the reservoir."

Another great explosion sounded immediately outside as a second bomb came down from the Europan ships.

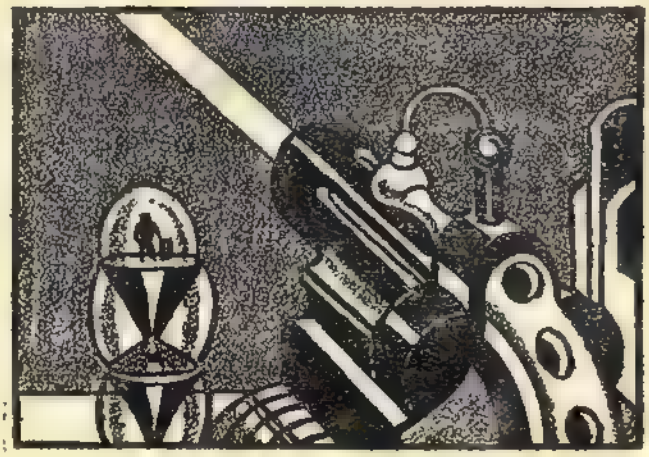
"Investigate for breaches in the reservoir walls, and repair them. There will not be many more bombs!"

He switched off the armory, and got the London Exchange. The face of Lochman Reynolds stared at him

[*Turn Page*]

COSMIC CATASTROPHE

HOVERS OVER HUMANITY IN JUDGMENT SUN



A Complete Novelette of Doomsday Panic

By EANDO BINDER

In the Next Issue of THRILLING WONDER STORIES

from the wall by the control board.

"Reynolds, you know me."

"You are Lee Cass, Day Executive of the Protoplasmic Station," nodded the president of Europa. "Do you surrender—"

"I surrender nothing. I called to say that I have just annihilated the Pacifican force sent to take the Station, as I will annihilate any other similar force. I also called to say one more thing."

He paused to gather courage for the most supreme statement of his life. And as though by ironical direction of fate, the observation room door opened, and Bridgman came in. Bridgman, the cynical and cold! Bridgman, whose antiseptic indifference to humankind was perhaps kinder in the long run than Cass's instinctive humanity.

"I called to say this," Cass went on, clearly and distinctly. "You will stop the war with Pacifica. You will sign peace pacts at once. You will agree, with Pacifica, never to begin a war of aggression again. If you do not—"

Bridgman's eyes were on him. His passionless, composed face was a tonic.

"If you do not," said Cass, "I shall utterly destroy both Europa and Pacifica with the devouring force I have at my control!"

Reynolds raised a palsied hand to his trembling lips.

"You wouldn't!" That would mean the extinction of half the peoples on the face of the globe! You—wouldn't!"

"As God sees me," said Cass, "I would!"

THE silence filling the transmitting room of the London Exchange was tense in the observation room of the Protoplasmic Station. Then Reynolds broke. His shoulders drooped, the muscles of his jaw sagged. In thirty seconds he became what he was: an old man, a weary shell, now that the driving force of unearthly ambition had gone.

"You win, Cass," he said in a cracked voice. "I'll sign with Pacifican delegates—"

Cass switched off the London Exchange. He sank to the metal chair beside the board.

"I was praying he'd take that ultimatum from me, where he would never have taken it from a rival dictator out to conquer him," he sighed.

He covered his face with his hands.

"I said that as God saw me, I'd do it," he whispered. "But I—I—"

Bridgman nodded, unperturbed.

"I know, of course, even if Reynolds didn't," he said. "You lied."

Next Issue: ELIXIR OF DOOM, a Novelette of the Sub-Atomic World by RAY CUMMINGS—and Many Other Unusual Novelettes and Stories!

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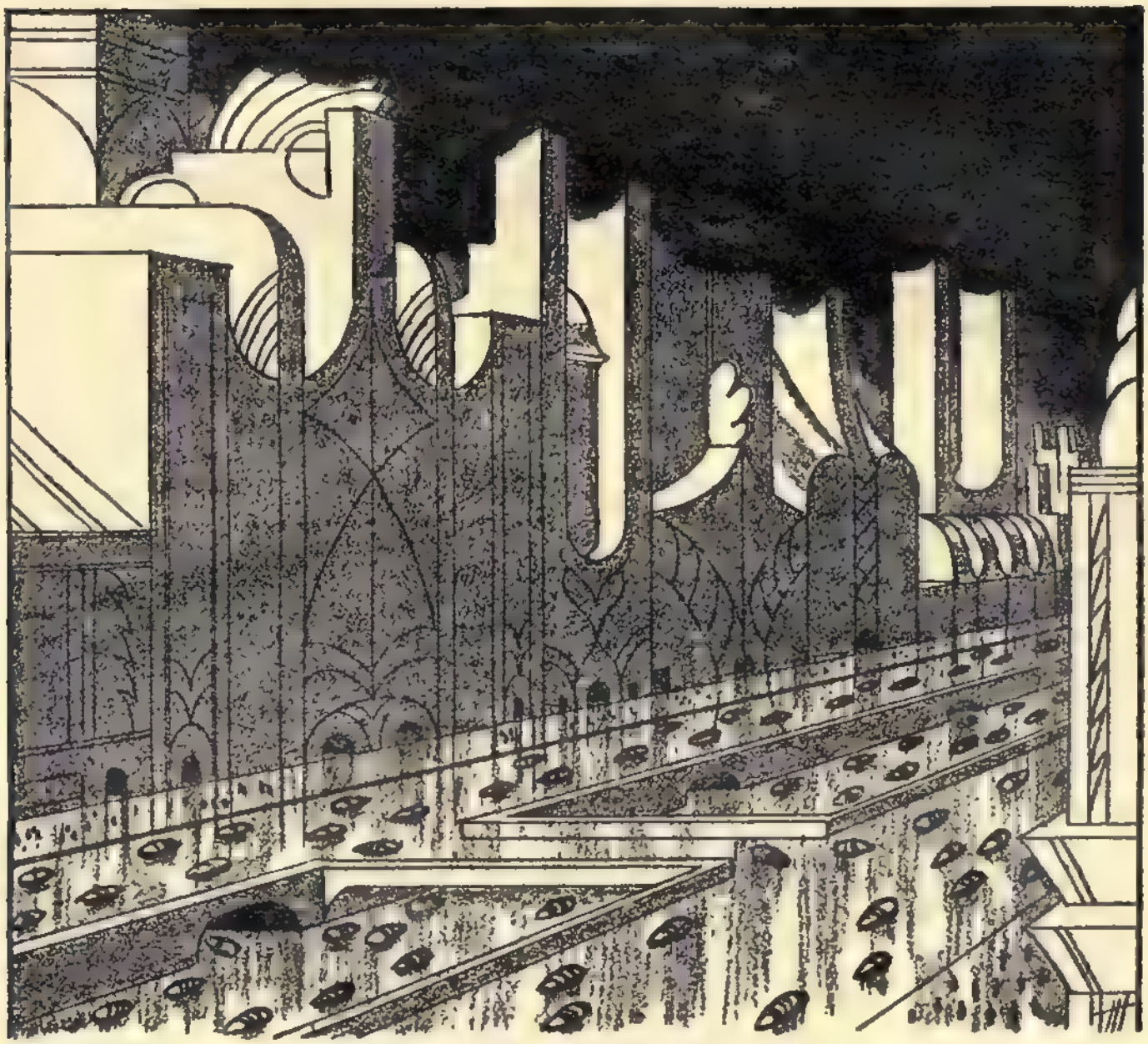
BLACK FOG



It came without prelude. Buildings vanished

A Malignant Gaseous Mass from Hyper-Space Intercepts Earth's Orbit and Throttles the Life-Forces of Humanity!

By DONALD WANDREI

Author of "The Red Brain," "Earth Mimus," etc.

THE astronomers did not forecast the coming of that strange substance from the infinite reaches of space. No watcher of the night skies knew that anything extraordinary drew near. Spaceships traveling the lanes beyond the Solar System, or the inhabitants of worlds in other galaxies might have been aware that danger approached, but mankind, even if it had possessed advance knowledge and warning, could not have halted the invasion.

In this cosmic drama, the course of

Earth intersected the apparently straight plunge of that unknown stuff from immeasurable nowhere into immeasurable infinity. Astrophysics is a science of profound complexities. The Earth turns on its axis. The *Earth revolves* around the Sun. The Solar System itself is hurtling *through* space. The entire universe may be moving toward a specific point.

Nothing in all the galaxies is still or fixed or permanent.

Yet something vast and terrifying entered this tremendous universe of stars and systems and motions and change, something that fell at a velocity which can only be guessed, plunging through systems and stars, passing through solids as easily as through space. And when it came without warning in the spring of that fateful year, it bewildered some, frightened others, but no one at first had any conception of the real damage.

At about two o'clock on the afternoon of May 5, 1960, without shadow, without prelude, without previous signs of any sort whatever—blackness fell.

Black fog. Suffocating, intolerable, like a thick sea, shot with needles of pain. The sky vanished. Buildings vanished. Neon lights vanished. Pavements vanished. People vanished. There remained only blackness, absolute, impenetrable.

For perhaps a second or two, pedestrians continued on their way, and completed the action or phrase they had begun before astonishment and fear paralyzed them. A distinct but brief hush ensued. Then the screech of brakes, as drivers brought cars to a dead stop. Crashes. Murmur of excited voices, cries a crescendo of sound. Whistles, shrill whistles of policemen. Blackness of pulsing density, suffocating. Friends clung to each other and strangers grabbed desperately for some human contact.

Matches rasped. No light appeared. Scorched fingers dropped the useless sticks. Housewives, engineers, drivers of vehicles cursed when the click of hastily turned switches failed to produce light. There was no light anywhere.

An immense and curious clamor rose above New York City. Like moles, the inhabitants stumbled around on the streets, in their apartments, in stores, wherever they had been when the incredible night descended, and groped for walls or anything solid by which to reassure themselves and get their bearings. Well-trained motormen halted surface and elevated and subway cars. Casualties, in spite of the suddenness of the phenomenon, were remarkably few. Some pedestrians crossing streets, others who blindly stumbled off sidewalks, went down under automobiles. A number of vehicles crashed or piled up on obstructions.

The same scenes occurred all over the continent. In Philadelphia, Washington, New Orleans, St. Paul, Winnipeg, Mexico City, in country and city —darkness instant, absolute. Casualties. Slamming of brakes, crashing of automobiles.

FARMERS halted in the midst of tilling fields. Business stopped. Broadcasting stopped. Transportation came to a standstill. Government stopped. Everything stopped. The Black Fog paralyzed all activity.

On the opposite side of the globe, where night had already fallen, the coming of the intenser blackness caused less confusion, and came to the attention of millions only after they wakened the following morning.

Religious fanatics, strange sects in far countries, primitive tribesmen, proclaimed the end of the world, the day of judgment. The superstitious grew panicky. The phenomenon nonplussed even scientists toiling in laboratories.

Breathless waiting. Tense straining in darkness. Pressing of countless buttons that failed to light a single bulb so far as anyone could tell, except that the bulbs emitted heat. Angry protests about the breakdown of electricity. Fear of attack, and the power of some strange new weapon. Fear of a scourge of blindness. And nothing to do but talk in darkness,

wait in darkness whose value was absolute.

As suddenly and mysteriously as the phenomenon began it ended. Buildings and ground and people sprang into full view, much as they had been. Eleven minutes had elapsed. Frightened shoppers peered around with white faces. Engines began to run again. Ambulances cleared their way to wrecked cars and stricken pedestrians.

A shrill and excited babble burst out. Everybody talked to anybody at hand. A few persons witnessed odd by-products of the visitation. Wisps of black fog drifted down from the ceilings of buildings, drifted through floors, drifted down to basements, and vanished into the ground.

A woman about to dive from a springboard fainted when she saw wisps of black smoke issue from the soles of her feet and sink into the pool below her. A farmer stood petrified, jaw agape, when black fumes sank from the belly of a cow and seeped into the soil.

BLACK FOG OVER AMERICA screamed the extras, and WAR SCARE FEARED in the headlines; and HUNDREDS KILLED, and BLACK FOG WORLD WIDE. The universal topic of conversation persisted for days, but no one claimed responsibility for the Black Fog, no mad genius announced himself the inventor of the phenomenon, nor did any war scare follow. The Black Fog just came and departed, once and for all.

Science, left without a single specimen of the blackness to analyze, took to theory. The Fog had been a fact, an eleven minute fact, without parallel. Science had not caused the Fog. Any nation would have honored the man who could duplicate the Black Fog and control or localize its distribution, for it contained the key to power and conquest. In war it would have paralyzed the movement of troops and routed the most highly organized enemy on land, sea, or sky. But nations and philosophers alike sought in vain for an explanation.

The best answer, in the midst of hundreds of arguments and interpretations that continue to this day, came from Professor L. I. Hayle-Phillips, chemist and physicist. Other scientists suggested that Earth had entered a region of space such as one of the dark nebulae. They hypothesized an electrical precipitation of all the dust and dirt in Earth's entire atmosphere.

They presented theories about a violent disturbance on the Sun, or passage through some warp of space, either of which occurrences might temporarily have cut off all light. Another guessed that a temporary but universal blindness had affected mankind as the result of an unknown invisible gas.

BUT the words of Hayle-Phillips in a paper now famous have won general acceptance. He wrote:

"The failure of astronomers to herald the approach or report the presence of the mass widely known as the Black Fog has caused undue recrimination. It is easy to account for the failure. The astronomers didn't report the black mass because they couldn't. They couldn't because the mass approached at a speed the same as or greater than the velocity of light. Traveling at such velocity it would not cut off the rays from stars and other luminous bodies behind it. It would simply be a blind spot in space, a blind spot shooting toward Earth, a blind spot absolutely undetectable until the exact second of its impact with Earth.

"This explains the sudden appearance of a great, blank, black area, a perfect ellipse, that obscures fully one-seventh of the sky. The area marks the departure of the Fog on its journey through the universe. We can of course watch it recede even though we did not see it approach. The ellipse will tend to become more like a disc viewed edgewise and of smaller visible area as it speeds on its way. It will take four years to cross the great void around the Solar System, and the same period of time will elapse before the light-rays of the nearest stars in its line of flight reach us.

"Knowing that the Fog lasted eleven minutes, and assuming that its velocity paralleled that of light, we can roughly estimate its thickness at 11x60x186,000 miles, or 122,760,000 miles. Shaped like a double concave

lens, it struck Earth at such a tangent as to seem ellipsoid, and will eventually thin to the shape of a disc seen edgewise, until it passes beyond range of our telescopes into the remote outposts of the universe.

"According to the Lorenz-Fitzgerald contraction, the mass would foreshorten in the direction of flight. This may account for the shape of the Fog. However, we must remember that all our laws and theories, all our science, are based upon matter and energy as we have previously known them. The discovery of a new element above 92 or below 1, or the arrival of a four-dimensional solid upon our three-dimensional planet, or finding another color between the red and the violet, would compel us to change our basic laws.

"The Black Fog was such a phenomenon. We need new theories to explain it.

"The Black Fog consisted of a substance, stuff, gas, fluid, mineral, material, or other element or composition of elements, utterly foreign to matter as we know it. The Black Fog was a hyper-element, perhaps originating in a four-dimensional hyperspace, and passing without interference through even the densest solids.

"It absorbed light 100%. It was odorless. The feeling of suffocation, of pressure, of tremendous contraction and expansion, experienced by almost everyone during the period of the Black Fog resulted either from the force of impact or from the nature of the Fog. In its own universe or projection or extension or condition of hyper-space, it was doubtless a substance of inconceivable density. It lost its true properties and became nebulous when it entered our three-dimensional universe.

"A violent cataclysm of a kind beyond our comprehension blasted the mass out of its hyper-universe, forced it and squeezed it into ours. It will continue on its path until in some far distant era it reaches the opposite end of our universe and returns to that region of hyper-space and hyper-time from which it came.

"Whether the Black Fog has left any permanent effects is too early to tell, since we don't know its exact properties in this universe. But it will unquestionably leave serious effects for years to come. The pain-flashes that accompanied the Fog indicate ultra-radioactivity of an unrecorded kind. We can only wait for whatever developments ensue. These may take the form of internal or external burns, decay of tissue, cancerous growths, aberrations of behavior, or mental or physical derangements."

HAYLE-PHILLIPS created a one-day sensation with his report, but as weeks passed, the phenomenon became overshadowed by other events of topical interest that filled the television broadcasts.

The scientists, however, knew that something had gone wrong. A month after the Black Fog, the price of guinea-pigs and rats for experimental purposes began to rise. It soared by leaps and bounds. Two months after the catastrophe, those little rodents reached such a premium that they were far too costly to be used. The supply houses replied to letters of inquiry and protest with, "We regret that we are unable to fill orders for guinea pigs, mice, rabbits, rats, and other small rodents. For reasons unknown it has proved impossible to breed new stock, and the supply on hand is exhausted."

About the same time, medical authorities and specialists in gynecology found a diminishing demand for their services. Women stopped coming to them for prenatal advice.

An alert reporter idly studying statistics and vital records made the imaginative leap that brought him to the truth. He got the greatest scoop in history when his paper came out with the entire front page containing just three words in huge, black letters: ALL LIFE DOOMED.

The crowds that mobbed the newsboys found on page two:

"The human race is faced by extinction. The Black Fog was the direct cause. The irradiation in it deprived humanity of the ability to reproduce itself. The birth rate is falling rapidly. The last child will be born within six or seven months.

"Mice and other short-lived animals are already nearly extinct. The same disaster has overtaken every kind of animal life.

"It is believed the plant and vegetable kingdoms have suffered a similar fate."

In homes, in restaurants, on the city sidewalks, along the skyways, and through the ether lanes that message poured its fatal prophecy.

"Doomed?" questioned the gynecologist. "It is too early to tell. This may be only a passing condition. The human race must survive. Children must be born. Let us devote every effort to counteracting the effects of the Fog."

The scientists experimented with serums and drugs, chemicals, radiations, glandular secretions and extracts. They tried anything and everything that could possibly work. But the months ran on, and one by one the hopes disappeared, and the prematurely announced cure-alls petered out.

Humanity never fully recovered from the depressing paralysis of that first shock. To a degree existence continued as before, with less gayety and more false optimism. Long years lay ahead. It would take a century or more for the last survivor to die. Much could be accomplished in that time, perhaps migration to another planet, or discovery of a method to restore vitality. The effects of the Black Fog might gradually wear off in time for the depleted races to survive and launch a new civilization.

Birth statistics became front page news. Six, seven, eight months passed. Births grew rarer, only a few hundreds for the entire world each day, then only a few dozens, then days passed without a single child born. Nine and a half months after the Black Fog, the last birth, twins, a boy and a girl, the offspring of a native Senegalese, took place. The twins, ugly little creatures, achieved fame and homage from the rest of the world.

OFFERS, gifts, and wealth showered them. They received the best of medical care. All opportunity lay open to them. The knowledge and resources of the whole planet were at their disposal.

Unfortunately, their mother went off one afternoon upon an errand of her own and for reasons that she didn't divulge. When she returned there remained of the twins only such osseous material as the army ants had found unpalatable.

Throughout the winter, the papers of cold regions carried disturbing accounts of crop failures elsewhere. The price of fresh fruit, vegetables, meat, and grains began to soar. With the arrival of spring on the rest of the world's agricultural areas, men finally realized the full scope of the disaster.

The long rows of wheat and corn and grains and hay sprouted, grew taller as the summer waned, but never a seed or an ear developed. The old trees and the standing bushes and vines and perennials grew green, but no bud or blossom or fruit issued. They were barren plants, cereals, and fruit trees. There would be no harvest. All things growing had been rendered as infertile as the vertebrates.

The Black Fog not only had made mankind sterile, but also small animals and insects had lost the power of reproduction. Every species of plant and animal, every kind of bird and fish, every life form whether marine or terrestrial or arboreal, whether reproducing by seed, egg, or pollina-

tion had lost the ability to generate its kind. Only the amoeba, the primitive worms, and the lowly organisms that reproduced by division and simple fission could survive, together with mushrooms and fungi that reproduced by spores.

The course of evolution had halted. The mutation of species had stopped. The Black Fog, irradiated with a mysterious energy, had permeated and penetrated everything on Earth. It had annihilated the foundations of existence.

Garden vegetables became a thing of the past by the end of 1961. Fresh fruits and berries could not be bought at any price. Dried fruits of the preceding year shot up to five, ten, twenty-five dollars a pound before the year was over.

The great herds on the western plains of America, and in the Argentine and Australia, had no calves. Sows did not litter. Mosquitoes, gnats, flies, butterflies, mice, hundreds of species of short-lived insects and small animals had already become extinct.

Governments and nations declared martial law, impounded all stocks of food, and established a rigid system of rationing. Fortunately, there existed a large world carry-over of wheat and grains. There was plenty of meat to last several years, and enough grass, vegetation, and infertile crops to feed livestock. The sea held immense quantities of fish. Science had discovered methods of extracting and concentrating the different vitamins by utilization of cornstalks, cellulose, and waste material.

Huge quantities of these concentrates, as well as of canned goods of every kind, filled stores and warehouses. Synthetic sugars, starches, proteins, and vast amounts of preserved natural products formed the tinned supplies.

But famines decimated China, India, Africa, and other poor countries, or countries whose main diet consisted of a single staple such as rice or potatoes. More fortunate nations would not and could not help the stricken areas. War never became a threat, for it would have been impossible to mobilize and supply an army except by starving civilian populations.

It is difficult for us who survive to realize the vast and permanent changes that affected industry, economics, commerce, society, and governments within the years immediately following the Black Fog.

THE world's production machinery, geared to supply the needs of a constant or increasing population, faced a dwindling demand. As raw materials became scarce throughout the food industries, the machines stopped. Factories in other lines closed, then the making of durable goods ceased. Unemployment affected the whole of civilization. Ships rotted at their piers. Commerce ceased and business liquidated itself.

The religious, ethical, and sociological structure of society broke down. The necessity of race preservation obliterated the will and the rights of the individual.

But the years passed, without a birth, and as the stocks of food diminished, so dwindled the populations of countries, and the average age of humanity crept ominously higher, while the streets became barren of youthful faces.

The scientists labored. They achieved miracles in extracting synthetic foods from the forests of the world. Extinction overtook game of all sorts. Domestic animals existed only in memory. The song of birds and the hum of insects had vanished forever from the woods. The seas, once teeming with life, now yielded merely an occasional whale, an infrequent turtle, a giant clam now and then, and what few fish had survived from the last spawn before the coming of the Black Fog.

Fields lay brown and barren of grass, hay, weeds, flowers. No longer did the annual miracle of creation occur. No longer did the cycle of birth and death and change tinge the course of life with mystery. Only death continued.

Though factories remained almost

universally idle, and though much of man's initiative, energy, and productive capacity had dissipated, work intensified along other lines and new experiments. The first successful rocket flight to the Moon took place in 2012. The year 2018 saw exploration of all the planets of the Solar System, and from each came back the same disheartening report. Some had never s u s t a i n e d life. Mars bore ancient, cryptic ruins. The once lush vegetation of V e n u s was withering and dying. The Black Fog had stricken other worlds than Earth.

Strange silences brooded over the terrestrial globe. The very atmosphere and climate were changing, thinning, as vegetation became scantier and gave off less oxygen. Precipitation lowered. The interval between rainfalls grew longer, and the rains lighter. Desolation walked the face of the Earth, and loneliness came hand in hand with death.

During these later declining years in the twilight of civilization, all that was admirable and beautiful and noble in the human races, all that was evil and corruption, flowered alike to the ultimate peak and the lowest degradation. The temperament of the individual guided his approach to oblivion.

A handful of philosophers contemplated extinction with the same resignation and serenity by which they viewed the eternal darkness that is the fate of every man. It did not matter to them that the race itself would perish, for did not the race perish, so far as the individual was concerned, when the individual died? And was not death the heritage of every individual?

But the philosophers were few, though a burden of frantic weariness and a visible presence of despair underlay even the wildest orgies. Minds crazed with alcohol, narcotics, and passions could never wholly escape the knowledge of doom. There was a feverish note, a hectic color, a hint of aberration, a suggestion of insanity in the fantastic extremes of those who tried to win a brief, drugged prelude to oblivion everlasting.

THE spring of 2020 produced a curious novelty and witnessed a brief flare-up of hope. An object fell from the sky slowly toward the ground in the Alleghenies not far from Pittsburgh. Searchers covered the roads, climbed mountains, and in a deep ravine finally discovered the object.

Of considerable size, it had apparently been a spaceship. The twisted and crumpled wreck retained scarcely a vestige of the original wedge-shape. Inside lay the bodies of curious creatures, dark green, knobby and gnarled, with spiky protrusions and an external covering harder than the horny carapaces of turtles.

Where they originated, the nature of their life, how they came within the gravitational pull of Earth, the period of time and space to which the wreck belonged, and why the cruiser did not fall so rapidly as to grow in-

[*Turn Page*]

candescent are mysteries without an answer. No one could determine whether collision with a meteor in far regions of the void wrecked the ship, or battle in some cosmic war.

This bit of celestial débris contained machines and instruments of peculiar design, unknown materials and equipment, and supplies of enigmatic nature. The last included a number of small pellets, some green, some purple, others blue, orange, black, and pallid gray that glistened like B-B shot.

Afraid of possible poisons and explosives, the discoverers of the wreck did not touch anything. The scientists who took control planted some of the weirdly colored pellets during the course of their investigation.

They grew. They grew with amazing fecundity. They produced stalks eight feet tall at the end of the first week. The green pellets developed enormous balls bristling with sharp spikes. The spikes turned brown within three weeks. Underneath lay a green pulp enclosing hundreds of glistening green pellets. The pulp proved palatable, with an indescribable flavor between mustiness and sweetness.

Different plants matured from the other seeds. A swart, purple creeper covered with hair instead of foliage, a creeper whose entire length contained edible fiber of a tangy, metallic taste, and whose seeds filled a central pod that extended from root to extremity. A bush with crisp, scarlet leaves like flaming ribbons that rustled on the wind. A pale tuber, sickly white, but aromatic, and which exceeded the size of a bushel basket.

Thus the infinite regions of space which had at first brought life to Earth, then death and decline, now supplied the seeds of a new vegetative life. They were freakish, fantastic growths. They multiplied with incredible rapidity. They grew in dry places and flourished on the sparest soil. Their violent coloring overshadowed the old, sere, vanishing vegetation native to Earth. But the new plants brought the promise of life, though there would eventually be no human eyes to see it, no human existence for it to sustain and nourish.

By the summer of 2022, in spite of the riotous colors and unearthly forms that the new growths cast across the land areas, an atmosphere of utter desolation prevailed. Tokyo, levelled long before by earthquake and fire, had never been rebuilt. Half-starved degenerates prowled through its wreckage. Abandoned vehicles rusted on the boulevards of Paris. Every pane of glass had been smashed in store windows. Dust eddied on empty shelves and down the corridors of deserted buildings.

The now rare fogs of London veiled a metropolis of tomblike silence. A miasmic, rotting odor polluted the waterfront, where thousands of ships rusted and rotted.

SAN FRANCISCO, Chicago, Buenos Aires, Moscow, all the great capitals of former days, had succumbed to the swift encroachments of fire, pillaging, weather, to human assaults and the destructive agencies of time. Less than ten thousand inhabitants occupied New York City. All California did not contain one-tenth the population that San Diego alone had possessed a century earlier.

The average age of the survivors had risen to more than seventy years. And only then did the last of mankind become aware of the new inheritors of the planet.

It was not strange that they received such belated knowledge of a fact that must have existed for decades. Ever since the day of the Black Fog rumors had spread. A woman in Tibet escaped the universal fate. An Indian in the upper regions of the Amazon had borne triplets. A tribe of Eskimos had miraculously been spared. The effects of the Black Fog had worn off various persons throughout the world. But as each rumor proved unfounded, and as the years and decades passed with no indication that humanity would survive, apathy greeted the legends of birth.

Then, too, vast primitive areas of

the world—the interior of Africa, the jungles of South America, the plains of Australia—sparsely settled before the coming of the Black Fog, had been the first from which mankind disappeared after its arrival. And it was these remote, forgotten regions that fostered the new life.

Hayle-Phillips had truthfully written that the Black Fog destroyed the ability of each species to reproduce itself. Most of the vertebrates of the orders lower than man had quickly passed into extinction.

But cross-breeding, the mating of unlike species, had not been stopped by the strange Black Fog. The occasional hybrid unions that had produced freaks of the animal world before the Black Fog had continued afterward, and from these ill-assorted matings issued monsters and new types. The majority died. Those that survived had the power of reproduction.

A fantastic, dangerous, and crafty type of panther-ape has begun to overrun Africa. The creature is equally at home on the ground, in the trees, and in water. It possesses rudimentary speech, utilizes its forelimbs to protect itself and construct shelter, uses shrill, yowling words, and dominates other hybrids.

The jungles of South America have bred a sub-human species whose origins are not known. The creature attains a length of five feet, is covered with a coarse wool, has hoofs upon its hind limbs and digits upon its forepaws, and employs a limited, bleating speech. It somewhat resembles the deity Pan of Greek mythology.

Whether the course of evolution will carry them along toward the peak of a new civilization in centuries to come we shall never know, or whether they multiply with fecundity, or whether disease and battle exterminate them. Perhaps the history of civilization has been written and the sub-human things will sink lower. Or perhaps they will develop during the far future greater powers and resources than man. They may evolve a cultural pattern or a weirdly monstrous civilization beyond our imagination.

We who are left care little. We are old and white-haired. The tolls of age are telling upon us, the afflictions and burdens of time. Unlovely women and wrinkled men, we hobble down desolate streets. We are the dying remnants of civilization. We are the voices crying in the wilderness, and only sub-human chatter answers us.

In the next issue: Earth's First Space Migration in
THE ASTOUNDING EXODUS, a novelette
of world conquest by NEIL R. JONES

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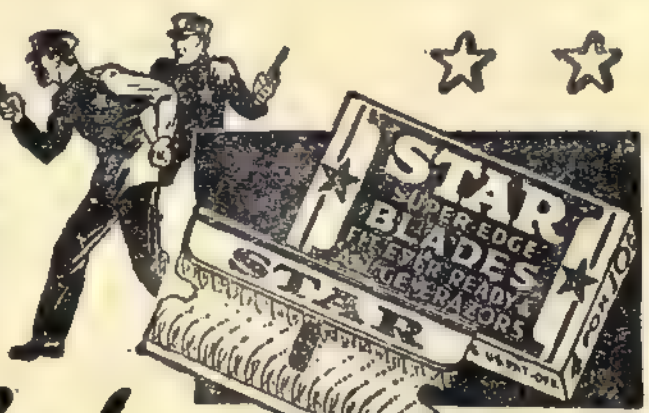

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BRAIN OF VENUS

Spurred On by His Thirst for Vengeance, the Mighty Lu Sang Unleashes Invulnerable Forces of the Universe in a Daring Attempt to Annihilate Civilization!

By JOHN RUSSELL FEARN

Author of "The Man Who Stopped the Dust," "Mathematica," etc.

CHAPTER I

Mutiny In Space

CAPTAIN BRANT, pilot of Liner 762 of the Earth-Mars Transit Service, stood quietly at attention before the desk of his superior. In silence he watched Commandant Bradley add the final official seals to a bulky package, scribble the details on a check-sheet, and finally hand them both across.

Something grey, veined and throbbing, lay in the undergrowth

"Brant," the commandant said quietly, looking up, "you are undertaking an unusual delivery on this trip."

"Yes, sir," Brant nodded.

"In this package, sealed in preserving solution, is the brain of Lu Sang. At the order of the Imperial Surgical Council it was removed from that notorious Chinese criminal's body when he was under the anaesthetic preceding his death for his countless crimes. The object in removing it while he still lived was so that his brain would still be alive when transferred to the preserving solution. You will take it to Mars and there deliver it to Kron, the head surgeon, who will send a special messenger to the space grounds to meet you. It is his wish to study the brain of a criminal from Earth so that he may learn to eliminate similar traits in Martian brains. You understand?"

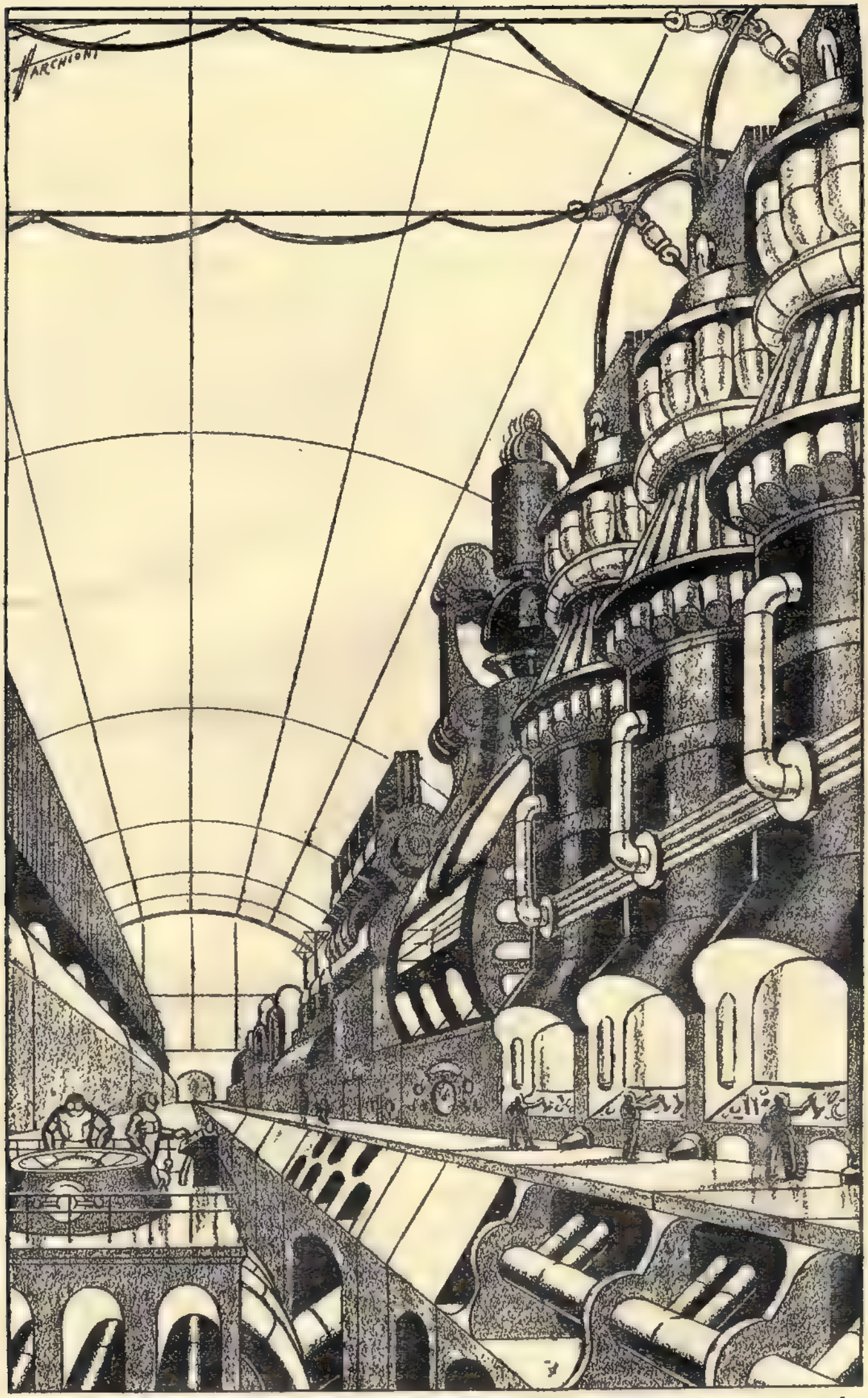
"Perfectly, sir," Brant answered crisply. He took the package gingerly, stuffing the check-sheet in his pocket.

"Very well, then, that is all. Have a good trip."

Brandt departed with agile strides, but once out in the long exterior corridor he permitted a frown to come to his face. It was not the assignment that worried him; that was mere routine—but the thought of the difficulties he was likely to encounter on this particular voyage to Mars.

For months now, ever since the new Earth-Mars Corporation had been in-

A Novelette of Universal Destruction



Desperate scientists worked in the midst of terrific heat and light, protected by heavy suits and helmets

stalled, there had been a slowly growing trouble among the men — the grimy, embittered wretches who toiled in the depths of the space monsters, tending the rocket-tube equipment, grinding out their beings in torrid heat and yellow-lit gloom with scarcely any remuneration for their services.

The old system had been better, controlled by the original discoverer of space conquest. But upon his death and the accession of the corporation into control, all sentiment and mass unity had been flung overboard. Everywhere wages dropped, from those of the lowliest rocket-tube charge-hand to the cleverest space navigator. And now mutiny hovered. Black hate was in the cause that had formerly been one of good natured, ambitious progress.

By no means was Brant blind to the danger signals. He secretly sympathized with the men but an uneasy premonition that danger was ahead had persisted in his mind ever since his landing from Mars two days before.

ONCE aboard the ship Brant went direct to his own cabin and there, with a sigh of relief, deposited the living brain of Lu Sang within the safe. He felt better with the infernal thing out of his hands. Hardly had he put the check-sheet in the file before the door quietly opened and Sub-pilot Anderson entered, concern on his lean, swarthy face.

"The men are grumbling again, sir," he announced. "I thought I had better tell you. I've heard rumors—about mutiny, about turning the passengers and masters adrift at the halfway line in a safety ship, taking over control of this vessel themselves. All sorts of things."

Brant stood with tightened lips for a moment, then he shrugged.

"At the best, just rumors, Anderson," he said grimly. "We'll meet trouble when it comes. Get to your post—give the starting order. Time's up."

"Yes, sir."

Anderson departed swiftly to the control cabin. After a moment's thought Brant followed suit.

He gave his orders for the departure mechanically, watched everything mechanically through the massive windows at the black rotunda of the void as the liner, gathering momentum, cleaved through the last vestiges of Earth's atmosphere into the infinity beyond. At once the outlook changed; the silvery translucence of the stratosphere heights had gone.

Space was studded with brilliantly glittering points of light. To Brant it all had no meaning; he was completely familiar with the stars. Mutiny! That was what dinned across his brain and frayed his nerves.

And while he wondered, that which he feared was maturing below in the bowels of the ship. Blackie Grednow, perhaps the oldest rocket charge-hand on the spaceways, stood beside his own particular fueling unit, massive hand on the metalwork. His little bloodshot eyes peered at his eleven almost naked comrades with the smoldering fire of excitement.

"Everything's all set," he announced eagerly. "We've got to strike on this trip; we've waited long enough. You know the plans—we take over the ship just as we near the halfway line, drive her back to Earth, then hold her there and refuse to land until new conditions are agreed to. That understood?"

The men nodded silently.

"We're facing Brant, Blackie," commented one of them. "Had you reckoned with that?"

"Brant?" The dirt-and sweat-streaked ex-criminal spat eloquently. "He'll crumple up like steel before a ray-tube when we get on to him. But remember! There's to be no bloodshed—there are passengers aboard, valuable passengers. We can't afford to defeat our own ends. You know your places when I give the signal. Now—back to work."

Silently the men returned to their tasks, but in the mind of one of them at least were personal plans. Newton reflected that it was one thing to achieve amenable conditions aboard a space ship by force—but it was distinctly another to make use of the wealth the ship contained. There

must be gold and valuables aboard—there always were on an Earth-Mars voyage. Captain Brant's safe usually held cargo of tremendous value. It was of this that Newton thought, and plotted for individual action when the time came to strike.

CAPTAIN BRANT began to feel more at ease as the days passed on and everything worked with perfect clocklike order. His vigilance began to relax. It was the one move for which Blackie Grednow had been waiting

Suddenly, without the least warning, the repulsor rocket-tubes came into being. The ship began to slow down rapidly in its tremendous headlong rush toward the red planet. Far away in the infinite blackness of the void the planet hung, a roseate globe no larger than a tennis ball.

Immediately the alarm bell rang. Passengers raced to and fro, heading for the safety space ships. Brant, tight-lipped, swung round from his controls, Anderson by his side—then both of them stopped in their movement as they beheld Blackie himself standing just inside the doorway, a levelled ray-tube in his grimy fist.

"Better not," he advised grimly. "Nothing will happen if you do as I say. Just remember the passengers."

"Well, what do you want?" Brant snapped, glancing helplessly at his own ray-tube in its rack.

"Complete control of the ship. You are to obey my orders. Everybody is covered; I'm warning you. You're going down below where we've been. You know the work down there. I'm giving orders from now on—"

Blackie broke off with a sudden start at the sound of the scream from the corridor outside. He took a step back, glanced in amazement, then looked back into the cabin.

"Brant, forget my demands for the moment," he said curtly. "You know I'm only aiming at getting justice. Some dirty skunk among that rabble of mine has betrayed me. Come on!"

Instantly Brant and Anderson seized their weapons and followed the cursing Blackie from the control chamber. They came upon a scene that caused Blackie mercilessly to level his weapon for action. The rocket crew, seizing upon their mistaken idea of liberty, was completely out of hand, forcing the shouting, furious passengers back into the main stateroom. Those who were protesting were not asked twice; ray-tubes mercilessly mowed them down.

"Stop, damn you!" Blackie thundered. "Stop, you blasted space rats, or by—"

"Justice!" roared a voice, that of Arnold Benson, perhaps one of the most fractious members of the rocket crew. "Justice! You were going to give us that, Blackie! Betray us more likely! We're taking what we can get and no questions—"

"Not while I'm in charge!" Blackie bellowed back, striding forward. Then he stopped, uttered the faintest of sounds, and fell prone to the floor, killed on the spot by the deadly force of Benson's ray-tube.

For perhaps three seconds there was horrified silence. Passengers and men alike looked on in blank stupefaction—then Brant leaped into action and charged forward. Anderson came behind him like a whirlwind.

In the space of a minute the main stateroom was a tumbled mass of fighting, battling figures. Ray-tubes flashed dangerously, men and women fell. When at last it was over the figures of Benson, Newton, and another man named Mason rose up from the carnage, blood-streaked and victorious figures, gazing down on the dead bodies of Captain Brant and Anderson, and the others who had been mowed down in their efforts at escape.

"So that's how it is," Benson muttered thickly. "All right—so be it. You men"—he glared savagely at a half dozen first-class passengers—"can get your coats off and find out what it's like controlling the rocket-tubes. You others will stay here for the time being, and don't attempt any moves if you want to live to get back to Earth. Come on, you two!" He made a motion to his two surviving comrades and they strode off to the control cabin.

ONCE within they looked at each other dubiously.

"Clever enough," commented Newton presently. "But how do you figure on living it down? Nine rocket hands, the captain and sub-pilot, and some two dozen passengers—all killed. We dare not return to Earth with all those dead."

"We're not going to," Benson growled. "We're going on to Mars and there we'll become heroes. There was a mutiny—Blackie Grednow started it. We got things under control after a hard fight. The passengers won't talk, they're too scared. Leave it to me."

"Say, do you realize that we're nearly five thousand miles off our course?" demanded Mason, turning from the route-checkers. "While that fight lasted we drifted—"

"Then don't waste time talking. Give orders to those idiots down below to fire the off-tubes. We're drifting—and quickly." Benson glared through the observation window. Far away to the left hung the argent ball of Venus, blazing silently through space. Through an immense arc lay Mars, miles out of the charted deadline.

"Sure you know how to chart the course?" Newton asked.

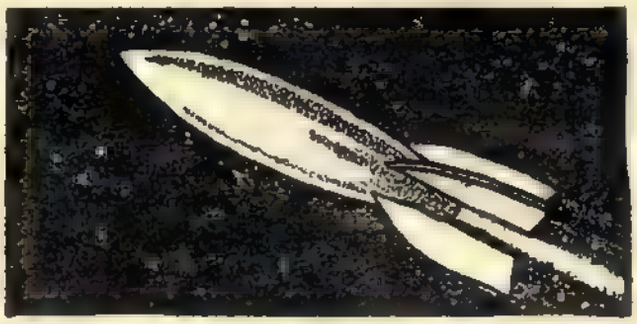
"Of course I do."

"All right then—I'll go and get the passengers and crew to work. You and Mason can look after things here. Join you later."

Newton departed, but not toward the passengers locked in the stateroom. Instead he stole softly down the deserted promenade deck until he arrived at the dead Brant's cabin. Softly he opened the door and went inside. Within a moment he had slid aside the partition that concealed the regulation safe; with a grim smile on his face he levelled his ray-tube.

"First come, first served," he commented thoughtfully, as he watched the heavy door drip to molten metal beneath the ray's impact. Then at last he was satisfied. Taking care to avoid the hot metal edges he reached inside and drew forth the contents.

The brain of Lu Sang he laid on the table after a casual glance at it. To him it was worthless. There were other things of greater import. A cargo of precious stones from New York's most lucrative coffers; a medicinal shrub of immense value for planting on Mars; money to the value of fifty thousand dollars in notes.



Newton chuckled and rubbed his hands as he took stock. Then the broad smile on his face faded as a shadow fell across the treasure.

He looked up sharply. Benson was immediately behind him, grim, rugged, cruel.

"So, you blasted rat, this is how you fix the passengers, eh?" Benson asked slowly, grinning viciously. "I come here to look for Brant's charting directions, and I find you've cleaned out the safe! All right—you're finished!"

"Wait!" Newton implored hoarsely, as Benson whirled him toward the emergency space chamber. "Wait! I'll do anything you want! Anything—"

"You'll do nothing!" Benson retorted, and with a tremendous shove sent the luckless Newton sprawling into the space chamber. A second afterward the heavy sealing door closed, accomplishing two things. The closing of the door dropped the screaming Newton into the infinite void of space, reduced him instantly to a tiny, frozen satellite of the space ship itself. Used only for emergency explorations in a space suit, or for repairs, the space chamber was a death trap to anyone unprotected.

For a moment Benson stood gazing at the hoard on the table, then he swung round as Mason came rushing in. The man took no notice of the treasure; his expression was one of utter terror.

"Benson, unless we can chart the

course we're sunk!" he shouted desperately. "Those damned fools down below don't understand rocketry. We're being pulled aside—we're within the gravitational field of Venus. Haven't you found Brant's charting sheets anywhere?"

"No." Benson set his jaw. "I can't chart a course, Mason; I thought I could. I'm only a rocket man, not a navigator. Hell, if only Brant had not been killed!"

"Newton! What about him? He knows more than most."

"He won't be able to help us," Benson answered slowly, and cast an unnoticed glance out of the window at the frozen grey spot that denoted the late rocket man.

"Well, anyhow, something's got to be done. We must fire all tubes away from Venus—"

DESPERATION caused Mason to leave his sentence unfinished. He floundered from the cabin, pursued by the alarmed Benson. Together they entered the control cabin and tried fiercely to calculate intricacies that it had taken trained men many years to master. It simply couldn't be done.

Benson stared with a blanched face at the growing face of Venus, world of mystery, far ahead. Venus, the world unknown. A strange icy terror crept the length of his spine. Venus—so lovely, so radiant, yet hiding beneath her dense, watery atmosphere with its high light reflective capacity, the first forms of squirming, terrible life. Those who had dared to descend on Venus' surface had never returned.

And with the seconds Venus was growing. Mars was far away now, retreating with every second. The space ship, uncontrolled, unmanageable, raced with ever growing speed through infinity, chained by the planet's gravitation.

In the stateroom the passengers milled to and fro, battling to obtain a view through the windows at the inevitable death speeding through space toward them.

Faster—faster, through the growing minutes, while two rocket men tried vainly to figure the right way.

Faster. . . .

Until at last the space liner hit the outermost edges of the Venusian atmosphere, screamed with unholy speed through it, and crashed at last with terrific, buckling force into an immense mountain.

CHAPTER II

The Brain of Lu Sang

THE mysterious disappearance of Liner 762 was the one topic of conversation on both Mars and Earth for many a long day afterward. The mystery vied in popularity with that of the old time sea vessel, *Mary Celeste*. No thought of mutiny seemed to enter anybody's head; there had been no suspicion of it upon departure. Communications of sympathy were sent through the void from every tenanted planet, even from the strange denizens of distant Pluto, who sent, in their own queer fashion, their deepest condolences.

Scout machines tirelessly searched the spaceways for some sign of the missing liner, but no traces did they find. Venus was thought of as the possible solution—but only thought of. There had yet to be a man with nerve enough to risk again the mysteries of that awful world. So the mystery of 762 remained a mystery.

Perhaps the most interested of all in the disappearance was the lean, saturnine Roy Jefferson, chief scientist and radio head of the New York space depot. Mysteries in space were his hobby, tempting danger his only delight in life. For a long time after the general hue and cry had died down the mystery of 762 continued to absorb his mind, though even he could make no move toward solving it. Nevertheless, he was alive for the faintest possible clue, and in a good position to receive any, for through him came all interstellar messages.

And while he pondered through the passing months, something strange was occurring on Venus, within half a mile of the wreckage of 762. At first sight the view was but that already

familiar to the hapless explorers who had come from Earth—and never returned.

Gigantic trees, overburdened with dense, over-ripe foliage of a bilious green hue towered upward from the steamy and impassable undergrowth that rioted on the spongy ground. Everywhere there was steam—the dank and insufferable heat of a very young and deadly world, twenty-six million miles nearer the sun than Earth, filled with gases mainly poisonous in their sheer, undiluted potency. Occasionally clouds drifted in the brilliantly blue sky, but in the main the sun blazed eternally on this, the day side, of Venus. Long since had Earthlings disproved clouds as the cause of Venus' brilliance in the sky; water-vapor in enormous quantities was the explanation.

And, near the ruins of 762, there was undoubtedly a change. Something grey and indeterminable lay in the undergrowth, something veined and throbbing, nauseous in appearance—the brain of Lu Sang. Flung from the table where it had been placed by Newton, in the space ship's crash it had rolled through a rent in the wall and dropped, practically unharmed, into the midst of the loam and nutrition rife in the Venusian forest land. Life stalked every corner of that weird vastness—life in its first mysterious stages, chemical change.

The very ground was saturated with the elements of protoplasm—carbon, hydrogen, phosphorus, calcium—all along the scale of chemicals. And into the midst of this, into the midst of an atmosphere plentifully supplied with carbon dioxide, had fallen a brain that still lived, a brain independent of a body that would otherwise have killed it—a brain absorbing unto itself all the young and healthy life that teemed about it, gathering strength, living, arising from the gulfs of mental suspension into which an earthly anaesthetic had originally plunged it.

Venus, the hell planet, receptive to life, in its early evolutionary stages. Its heavy atmosphere, permeated with a rich gaseous content, and the raw chemicals abundant in the protoplasmic soil all helped the alien brain to grow, expand and live. Cell tissue growth accelerated; and Nature, highly adaptive on embryonic Venus, quickly created a protective healing shell for the brain that would guard it against harmful bacteria and unfavorable climatic conditions. Mental life had come to Venus, mental life destined to go on, unhindered.

FOR two years after the disappearance of 762 events came and went uneventfully upon all the populated planets—Earth, Mars, Saturn and Pluto. Then on the memorable night of January 10th, 1999, there came the first hint of something amiss—a desperate cry from the denizens of Pluto, flashed to Earth by ultra-radio, and Jefferson, in charge, was the first to receive it.

"Mental changes affecting Pluto's inhabitants. Please investigate. Very urgent."

That was all, like a cry in a storm, and all efforts to recommunicate with Pluto failed completely. Jefferson dutifully submitted the message to Headquarters. Scout machines went out to investigate, and found nothing. Jefferson, however, the mystery of 762 still hovering in his keen brain, pondered the cry deeply, and as the days went on it became evident that the Plutonians had not sent their warning without cause. Something *was* amiss—a strange and incredible thing, affecting now the inhabitants of both Mars and Earth, and in a lesser degree on account of their slow receptive powers, the Saturnians.

Men underwent inexplicable transformations. They varied between supreme genius and profound idiocy, able to understand the entire cosmos in one moment, and yet baffled by a simple addition sum the next. Man lost touch with himself; he began to feel the influence of an immense and overpowering mentality exerting its effect upon him. From somewhere in space a gigantic brain force was in action.

At the very first sign of the mental disturbances Jefferson went direct to the commandant of the spaceways.

"There seems to be danger about, sir. A menace is threatening us and we've got to find out where it is coming from. Where there is danger, that is where I can be found. What are my orders, sir?"

Commandant Bradley pondered.

"I hardly know, Jefferson. The whole thing is so sudden; we don't know where to look. I have a report here from Grafol of Mars. His etheric detectors place the disturbance as coming from or near Venus. The periods of mental perturbation are varied. They continue for so long, stop suddenly, then go on again. The reason for the momentary stoppages remains a mystery at the moment. But we do know that the mental oppression is getting worse. All of us have felt it. But the idea of Venus being behind it is absurd! Venus is a young world, a world from which no man has ever come back alive."

"Early pioneers without modern equipment, sir," Jefferson replied promptly. Then, more seriously, "From my own observations it seems that this mentality is no ordinary one. It is gifted with finesse and polish, able to exact its requirements no matter what is incurred. A brain of high training, on Venus! But—*how?*"

"Wait!" the commandant interrupted suddenly, his expression changing. "A brain of high training—Good God, I wonder if it is possible!"

"What, sir?"

"Do you remember the mysterious disappearance of Liner 762?"

Jefferson smiled whimsically.

"I've never ceased to think of it, sir."

"Aboard that liner was a criminal brain, alive; it belonged to Lu Sang, the Chinese criminal. I wonder if 762 landed on Venus and the brain rooted itself there? Is it entirely beyond possibility?"

Jefferson stared at his superior blankly. "I think your guess is dead correct, sir. Venus must be visited right away. I'd like that opportunity, sir; it is the kind of thing I've been longing for for years."

The commandant nodded wearily. "I have no time to haggle; the danger is very real and imminent. You have my permission to leave the moment you are able. I'll assign Andrews to take over. But for the love of heaven, man, watch your step! Venus is no child's playground."

The lean radio chief nodded composedly.

"If it were I wouldn't be going!"

WITH the sunset Jefferson departed from Earth in a small express space flier, accompanied only by two of his closest comrades who, like himself, were never happy unless endangering their lives in some way or other. Stanhope and Bragg were their names, the one small and heavy, the other tall and sinewy, and both of them loyal to the cause in which they had spent their lives.

With terrific speed the space machine shot from Earth into space. Out here in the void, the three adventurers felt the mental forces in all their intensity. Beating waves of mental compulsion that brought the sweat to their faces in the effort of concentrating against them.

"Whatever it is it's sure got a hell of a kick," breathed Stanhope, turning a strained face. "How do you figure on beating it, Jeff?"

"I don't," Jefferson answered grimly. "I just want to locate it on this trip. How to beat it will come later. You've got to show me the thing—even if it is a brain—that can defeat the science of nineteen ninety-nine. Now hang on—we're going places!" So saying he increased the acceleration. Never for an instant did the unknown power of Venus relax. With the shortening distance its intensity grew, until when at last the hurtling flier was within a few thousand miles of the white planet, it was almost more than the men could do to concentrate on their tasks. The mentality waves were forcing them to turn back, to leave Venus to its own devices and, little by little, they began to submit. The ship gradually came to a near standstill over the glittering atmosphere of the planet.

Jefferson turned a rigid, ashen face to his comrades.

"We've—we've got to obey," he muttered mechanically. "Turn back."

He moved to the controls, then suddenly—staggeringly so—the mental compulsion ceased. Something large and dark, moving with considerable speed, blotted out the vision of Venus' glaring surface. The space ship swung around violently, snatched by a sudden strong gravitational field. Instantly the three were hurled off their feet, crashed helplessly into the wall, and lapsed into insensibility.

Jefferson returned to his senses aware that the space ship was in the midst of the blackest shadow, relieved only inside the cabin by the faint light of the stars. Puzzled, aching, he revived his two comrades and they moved in bewilderment to the window. Instantly their eyes became fixed to a small and desolate landscape, shining grey and metallic in the starlight. As the moments passed they did not, as they expected, move across the terrain; it kept steady pace with them.

Jefferson screwed his head around the angle of the deeply sunk window and peered above. Then and then only did he behold the edge of a blinding crescent—the edge of Venus itself.

"A Venusian moon — amazingly tiny!" he gasped. "A small planetoid of some kind of metal. But still a moon. Too small almost for observation from Earth."

"And we're caught in its tiny attractive field," commented Stanhope. "Well, it's interesting anyhow. What's next?"

"Have you noticed," Jefferson said slowly, "that the mental compulsion has now ceased?"

"Odd," was Bragg's comment.

"Odd nothing; it can mean only one thing. The metal of this satellite is of such an order as to block mental waves. It probably blocks all sorts of other electrical waves as well. Mental waves are electrical basically, must be. It's obvious now why mental compulsion on Earth stops periodically and then resumes. It must coincide with the time when this moon comes between the Venusian brain and Earth. All the other planets report the same occurrence," Jefferson informed him.

"And Venus itself?" Stanhope questioned. "What do we do? Explore?"

Jefferson shook his head.

"Too dangerous. We'd never stand it. We can take it for granted that Lu Sang's brain somehow took root in the chemicals of Venus, which has given it overpowering and increasing mental force. No, the best course is to anchor a section of this satellite's surface and take it back to Earth as a protection against mental attack. Thus shielded we can work out a plan to defeat this trouble—if it's humanly possible."

JEFFERSON paused and looked around as the radio contact to earth suddenly buzzed urgently. In an instant he had the receivers to his ears. The voice of Commandant Bradley came to him over the infinite distance.

"That you, Jefferson? What have you found?" Then before Jefferson could reply the urgent voice continued, "Something terrible is happening! We've received news from the Saturnians that space itself is changing. Distant nebulæ and galaxies are disappearing, being swallowed up in void. The trouble is also affecting our own solar system. Pluto has gone; Neptune reveals signs of also vanishing. We've had to use a couple of power ray machines to keep Earth steady because of the shifting of the balance. We've got one trained on the sun and the other on Alpha Centauri. That'll keep us safe for the time being. But that isn't all. Some sort of protoplasm has appeared on Earth, and it radiates mentality. It's overcoming the world—"

The voice trailed down into silence and ceased. Frantically Jefferson buzzed the contactor, without success. Bitter-faced, he flung down the receivers and made a brief explanation to his wondering companions.

"Things are getting tough!" whistled Stanhope. "Vanishing planets, protoplasm! What the devil next? What's it all for, I wonder?"

"This is no time to ask questions," Jefferson snorted. "We've got to act

—fast. Give me a hand with the blast-tubes; we're taking some of this moon back to Earth. Quickly!"

Without another word the three set to work, each performing his part of the task with absolute assurance. Disintegrator blast-tubes, operated from the base of the ship, set to work and cut a full square mile of the apparently solid satellite below. For a time that iron grey surface was ripped and torn with shafts of energy, then, as they ceased their activity the magnetizers came into action.

Immediately, the mile-square sheet, jagged-edged, was torn from its native bed and floated into space. In response the space ship adjusted her position to the new balance and a blinding segment of Venus appeared beyond the satellite's edge.

"Full speed ahead," Jefferson snapped.

The rocket-tubes roared and under their influence the ship began to pull away from the tiny satellite's weak gravitation, drew slowly out into the void away from Venus, the section of severed moon trailing at an unvarying distance in the rear, weightless, chained only by the space ship's own small gravity and powerful magnetizers.

Little by little the immense bulk of Venus began to appear as the distance increased and the satellite's width correspondingly lessened. And as it did so the mental compulsions returned.

Again the trio wrestled desperately with the mental waves, but this time they felt more than compulsion. There was a message, a distinct message, an impression of thought waves, as though a voice were speaking. Silent and rigid they listened.

"Be warned, before you go too far. You are grappling with the brain of Lu Sang, a brain that formerly lay in a pitifully inadequate earthly body. The time has come when I have learned all that matter has to tell; that being so I seek the region of pure thought, the thought that exists where matter is not. Originally in the dim beginning there was naught but space; the accident of certain crystallizing radiations produced matter—a cancer in the midst of an otherwise uniform sea of thought-impressions With my knowledge it is an easy matter to produce a radiation capable of causing atomic collapse through the medium of heat, the destruction of matter and its resolution into apparently empty space.

"Not until space is empty and all life destroyed can I obtain the real concept of thought. My mental radiations now are disturbing matter life, reducing it to the final stage when it will be a simple matter to destroy the living bodies without impairing the minds. These perturbations are caused entirely by the efforts of the human mentalities to escape from their Earthbound bodies. In the end they will all escape—that is my aim. So, puny humans, do not attempt to stand in my way. You may struggle as you wish, invent all you desire, but your end is inevitable."

WITH that the communication ceased, but the mental perturbations continued. The three men said nothing, and in a manner purely mechanical drove the flier steadily back toward Earth.

When ultimately they gained the landing grounds mechanical devices came into operation to take control of the colossal sheet of metal they had brought with them. Gently and carefully it was lowered to the ground, then, opening the door, Jefferson found himself facing Commandant Bradley.

"Thank God you're back, Jefferson," were his first words. "You got my radio report, of course? I was overcome at the end by a mental attack. Things have gone much worse while you've been away. The protoplasm is everywhere, slowly covering Earth. The same stuff has also appeared on Mars and smothered that planet completely. The same thing will happen to Earth. Worst of all are the disappearing planets. Thank God we have four force-ray projectors. Two of them help to keep Earth steady during the shiftings of the balance. What did you find? Anything?"

Briefly Jefferson related everything.

"So the only bright spot is our bringing the metal back with us," he concluded. "It protects us against the Brain's thought waves. We can build a shelter of it and work inside with peace. It's our only chance. There must be something that can destroy this infernal Brain—we've *got* to find something. If we don't all matter will be eliminated and all mind released to its primordial level before matter came. How many men can you let me have, sir?"

"You can have the entire space unit. We're running no space ships now."

Jefferson nodded.

"Send them to me, sir, and at the earliest moment we'll figure ways and means. Now, let's get busy."

CHAPTER III

The Brain Speaks

IN the days that followed men labored to build a small shed from the material of the Venusian moon. It was hard work—cruelly hard—but the need for urgency accomplished wonders.

And while the men struggled to erect the building on the space grounds, death was stalking in every corner of Earth. From every city came news of the steady death of populations, of people of weak mental resistance overcome by the onslaughts of the Venusian brain. The now vast seas of protoplasmic matter that also smeared Earth's surface were impossible things to fight.

"The stuff isn't brain matter, sir," Jefferson explained to his worried superior. "It's really unintelligent chemical, but somehow, probably through the medium of electricity, the distant Brain has managed to excite the atoms of lowly chemicals existing in the very ground into a formation of protoplasm. The stuff has a cellular reflective power which enables it to reflect the mental outpourings of the Brain with tremendous amplification, just as a mirror reflects the sunlight. The Brain is using it, I imagine, purely to increase the potency of his thought-range. Since the same thing happened on Mars it seems a logical conclusion. By this means the Brain has doubled his power, can reach everywhere."

"And now?" Bradley asked drearily. "How do we fight it?"

"We still have time," Jefferson answered grimly. "The shelter is finished. Inside the hut we are perfectly safe. And the only way to defeat the Brain is by electricity. One electric wave can always upset another if you go about it properly. Brain-radiations, or thought-waves, are electrical in nature. These incoming mental waves are in the vicinity of one hundred and ninety thousand frequency, working on the new Crookes-Matthew Table. Frequencies of that order are far and away in advance of anything yet produced on Earth, and the only way we can get it is by the electric and almost inexhaustible discharge of smashing atoms. You see, if we can once achieve a similar number of frequencies and direct them at Venus, it seems obvious that like will repulse like.

"In other words, the power of the Brain will be so heterodyned, or turned aside, as to cease to have effect. Then, while the effect is maintained and the Brain is helpless we will venture near enough to Venus' surface to smash it out of existence with large-sized ray-tubes. That cannot be done without the Brain being temporarily incapacitated. Normally it can turn aside any ray-tube in existence. It is virtually indestructible, unless under the anaesthesia of frequencies of a like power to its own."

"Go to it," the commandant encouraged. "I hope it works. And remember, the protoplasm stuff has reached West Virginia and is rapidly moving eastward. It'll be here any time."

Jefferson nodded. "If we're quick we can beat it. I'm going right now to make the final details."

The equipping and hook-up of the directional instruments with the main power lines proved a longer job than Jefferson had anticipated. Throughout two days and nights men milled

and flocked about the job, battling with both the elements of time and mental trouble. With every passing hour the force of the Brain was becoming stronger. Jefferson fumed and cursed, listened to desperate radio reports that told of the protoplasm's advance into Pennsylvania.

At six p.m. on the following evening, when the cabling and machine connections were at last completed, Mars vanished from the cosmic map. Instantly the two bracing power-rays, automatically controlled, changed their power, adjusting themselves to equal pressure and negating what would otherwise have been world-shattering earthquakes. Stanhope, who had been present at the observatory when the Martian disaster had happened, issued an immediate report.

THERE was nothing particularly unusual about the matter, it seemed. The Brain was obviously capable of utilizing radiations able to cause atomic excitation. Hence the atoms of Mars had been agitated through continuously rising temperature. Mars, it appeared, had passed through all the stages of atomic destruction. It had glowed red, then white, then violet as the 6000° C. temperature was reached. Higher and higher, until tremendous X-rays had poured forth into space; to be replaced by gamma rays as the temperature soared to millions of degrees. The nuclei of Mars' atoms had begun to tremble, and finally at 2,000,000° had collapsed altogether.

Mars had passed out in a grand splash of cosmic rays and ceased to be. Why the furious heat of the collapsing planet had not blistered Earth to cinders was a mystery. The only explanation, apparently, was that the Brain had its own ways of working, was saving Earth for its own particular experiments.

Jefferson's jaw squared when he heard the news. With hardly a word he entered the protective building not an hour afterward, accompanied by Stanhope, Bragg, and the commandant himself. No sooner was the door shut than activity began—the main power house of the United Powerlines being constantly in television contact.

Jefferson moved steadily and resolutely in the midst of the apparatus, gazed at the distance-gauge. From his calculations, he knew that the main immense transmitter, four miles away, was pointed so that its outflowing radiations would impinge directly on Venus. The remainder of his instruments told him exactly the load being carried, the number of frequencies, and countless other electrical details, while way back in the laboratories of the Powerline Company the atom-smashing apparatus was at work. Atom-smashing was not a new art to the scientists, but the amount of energy called for on this occasion most certainly was. One hundred and ninety-five thousand frequencies! That was what it was now.

It needed at least twelve atom-smashing machines, directed upon three one-ton blocks of copper to produce the desired load. Desperate scientists worked in the midst of terrific heat and light, protected by heavy suits and goggled helmets, watching an awe-inspiring display of disruption and annihilation, the result of which was transmitted direct to the protective shelter at the space grounds, and then to the transmitter itself.

For two hours, and more, Jefferson labored with the switches and resistances until he finally achieved a steady output of one hundred and ninety-five thousand frequencies.

"That's the first part, sir," he announced quietly to the commandant. "If I'm correct, the Brain can't operate with that force being hurled at it. Naturally the force will be blocked as that tiny satellite passes between, but that's hardly worth reckoning in. The power will remain on until Stanhope, Bragg and I have been to Venus and blown the Brain to atoms with the ray-tubes we've had fixed aboard our ship. We've got to go right away. You'd better stay here, sir. There'll be no hitch; the power is automatically controlled. Come on, you two."

The three moved to the door and opened it—but instead of an absence of mental compulsion, such as they

had expected, there swept in on them a tremendous communication, so intense that they staggered before it.

"So, you imagine by the use of electricity that you can defeat me? You pitiful fools! When will you realize that the electricity you have hurled into space is far from a detriment? Rather it is an advantage! I discovered that when the satellite passed me and reflected my own radiations. I absorb it into myself, increase my mental range to double because you have doubled the frequencies. You notice how strong my power is? Realize that there is no power that can stop my plans. I shall now destroy you in the same way I destroyed Mars, by a radiation that will annihilate matter. There remains, of the entire spatial universe, reckoning, that is, to Alpha Centauri, only Earth and Mercury to destroy, together with a few odd planetoids and moons. Tomorrow at eight in the morning, by Earth time, Earth shall pass. Remember that. And at that time those who have not succumbed to mental power will die in the ordinary way."

The three men heard no more. They stepped back into the protective shelter, dazed, alarmed. Almost mechanically Jefferson gave the stopping order to the power houses, then he turned a bleak face to the others.

"It's impregnable!" he muttered. "Instead of electricity stopping it, it's just used it! Yet there must be a way. And we've only got twelve hours!"

He stopped and sat down to think, head buried in his hands.

CHAPTER IV

The Last Chance

AT length Jefferson looked up, his eyes bright.

"There's only one chance," he said grimly. "It might just work. At eight tomorrow the new disruptive radiation will be hurled at Earth. But what is to happen if we deflect the radiation and turn it back on Venus?"

"Presumably it would wreck Venus," Stanhope returned obviously. "Or the Brain might absorb it. First find your deflector."

"That's simple. This satellite metal, of which this shelter is built, evidently reflects all known vibrations and does not absorb any of them—not even thought-waves. The Brain has proved that. That being so it is a certainty that the Venusian satellite itself will be able to deflect the disruptive radiations hurled from Venus back onto Venus herself."

"But why won't the Brain itself absorb the reflected radiations?"

"For two reasons. In the first place, this new radiation will be inconceivably more powerful—too tremendously potent for the Brain to nullify or absorb. It will annihilate him almost instantly. Secondly, in the past the Brain drew his energy from outer space. Now he's using his own, built-up thought power. It's a fundamental law of Nature that no organism can survive in its own waste. Just as the carbon dioxide we exhale proves fatal to other organisms—the same carbon dioxide absorbed by the exhaler would have a lethal affect on him. Similarly, the Brain will be unable to cope with his own emanations which will be, in a sense, his waste."

"Agreed," nodded Bragg. "The slight difficulty in the way is holding the said satellite still enough to accomplish the deflection. You can bet your life the Brain has got it all worked out to send the disruptive vibrations intermittently as the satellite whirls past."

"Naturally, but I'm thinking of our power rays which are holding Earth steady. We have two other power rays, standing by in case of emergency. Doesn't it seem possible that we can utilize them? Direct one at our moon, which is infinitely heavier than the Venusian satellite, and the other at the Venusian satellite itself, the power being just sufficient to hold that small body steady and stationary at the exact moment the Brain fires forth the disruptive power. That will cause the power to recoil and destroy all Venus at exactly eight o'clock. So far as the calculation goes, I shall go into space and give radio directions to

Earth. My instruments will check it."

Bragg smiled cynically.

"And the Brain? How do you expect to stand that mentality?"

"Simple. We have Venus satellite metal left over. We can soon fashion helmets both for myself and the men who will be working the power rays on Earth here. We have the apparatus to fashion as many helmets as we want. With those we will be safe."

AT midnight Jefferson left a world that was slowly disappearing under the steady advance of reflective protoplasm. He left satisfied, rough-hewn helmet on his head, content that Stanhope would see through the final details, content too that Bragg would expertly handle all the radio messages that came to him. He felt confident that the Brain would not intercept the radio messages, mainly because of the helmets.

Two hours after Jefferson's departure Bragg began to receive the necessary instructions—the rate of the satellite, its position—every detail, checked by Jefferson's own instruments, was given, to be immediately relayed by Bragg to the waiting Stanhope. He in turn gave the helmeted engineers the instructions and they set to work on the details of the two spare force projectors.

Helmeted as they were the men received no mental distractions, but they were forced to struggle constantly with ever-expanding protoplasm. New York was already a smothered city. The only advantage about the stuff was that it did not kill or digest human beings, merely rendered them unconscious.

So, watched by the helmeted commandant, the last conscious men of Earth made their last stand, waiting for the dawn, listening to the radio instructions that came through the silent night, uttered originally by a lone man situated almost stationary one thousand miles from the surface of the Venusian moon.

Jefferson himself spent the last hours with his eyes glued to the chronometer, timed exactly to Earth time. Then he gave the firing signal to Earth, allowing for the time interval of nearly eight minutes, and a corresponding eight minutes for the projected force to strike the Venusian moon. Back on Earth response was exact to the second. Lunar and Venusian force rays were projected to the pre-calculated second, allowing for the differences in distance. Helmeted men in the major power house fed the immense projector engines, engines now working to support four instead of two machines.

Jefferson waited tensely, eyes glued to the Venusian satellite. He watched breathlessly as it appeared on its usual fast journey round the parent world—but now there was something different. Its onrush was slowing down. Slower. The hands of the chronometer pointed exactly to eight, and exactly at the identical second the satellite halted, dead in a line between Earth and Venus.

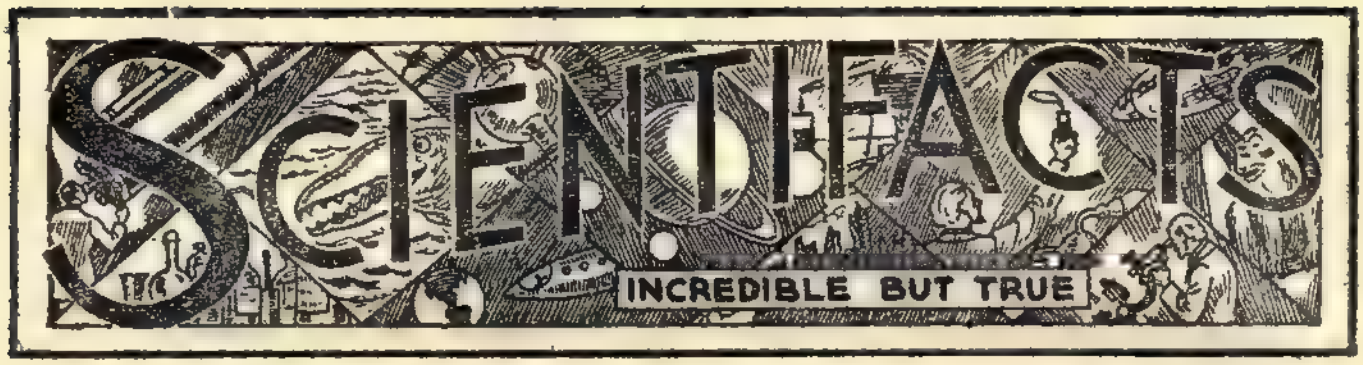
Jefferson never knew what happened after that. Too long he had lingered, too close to the danger zone, drawn by the uncanny fascination of it all.

He had one glimpse of a world crumbling and smashing into blinding flame, of a stationary satellite etched out against the glare. Vast and tremendous electrical repercussions beat through infinity, seized the infinitesimally small space ship and hurled it into the uttermost reaches of space.

Jefferson never knew what happened. Death claimed him instantly. His ship slowly returned, wrecked, to the position of the shattered Venus and gravitated finally as a tiny moon around the largest remaining piece.

Back on Earth, the danger averted, men waited through the days and weeks for the return of Jefferson—waited long past the time when the protoplasm, deprived of the energy from Venus that had given it life, had died and rotted, long past the time when man had recovered himself and set himself to the task of rebuilding the shattered solar system. The task of recreating a balance equalling that of the old.

But Jefferson never returned. He had tempted danger once too often.



A BRAND-NEW, FASCINATING FEATURE

By J. B. WALTER

HOW TO DETERMINE THE AGE OF FOSSILS

IT has always been hard to determine the age of fossil relics. In the past the site surrounding the find has always been carefully exploited in the hope that this examination would give a clue to the age of the specimen. If full information as to the site was not forthcoming, the age of the fossil had to remain indefinite.

However, all bones contain fat. A slow progressive chemical change occurs in fat under these conditions over a period of years. An examination of the fossil by a chemist will show the state of the fat, and reveal how long the bone has been slowly undergoing changes.

LIGHTNING ISN'T ALWAYS BRIGHT

THE brilliant discharge we call a lightning flash has frequently been photographed. It appears, of

course, in the picture as bright white streaks on a darker background.

Even a casual examination of such photographs will often reveal sharp black streaks, resembling the lightning flash, but in no way related to it. They may be jagged black lines perpendicular to the direction of the main lightning flash.

This black lightning has not been scientifically explained. There is, however, one theory that a peculiar wave-length of light is set up which reacts on the chemical of the photographic plate to produce black streaks instead of white ones.

A GREAT CLAMOR MADE WITHOUT A SOUND

A LOUDSPEAKER device which picks up vibrations that are utterly without sound and transforms them into a terrific din has been perfected by the Bell Telephone laboratories. The sensitive diaphragm is set vibrating, and the vibration balanced with an electric circuit.

Any disturbance of the vibration throws the balance out of adjustment and the electric circuit immediately starts an alarm to ringing.

The system has been used as a burglar alarm in vaults. The slightest movement in the vault disturbs the delicate vibration of the loudspeaker, and this disturbance may be made by the movements of an absolutely noiseless intruder.

CANADIAN HARBORS POUR INTO AMERICAN PORTS

THE bottom of the Great Lakes is slowly tilting with the result that the water level in American harbors on the south shore of the lakes is rising and there is less water in Canadian ports to the north.

The rise in level is as much as four

inches each year, and saves American port authorities many dollars annually by cutting the cost of dredging necessary to maintain the depth of waterways.

A POSSIBILITY OF GIGANTIC CATASTROPHE THAT WAS IGNORED

RUSHING upon the earth at a rate greater than twelve hundred miles an hour, the huge asteroid, Anteros, came within a million and a half miles of striking the earth. This

was not merely a gaseous body, but a billion tons of matter capable of destroying a territory as large as any state in America and killing every one of its inhabitants.

Despite all our observatories, Anteros, which missed us by an astronomical hair's breadth, was not even noticed until it had turned off into space and gone more than eight million miles on its way.

THE CITY OF SAN DIEGO MOVES WESTWARD

THE Naval Observatory reports that San Diego, California, has moved westward more than forty feet in the last seven years. This is offered as evidence that the crust of the earth floats on a semi-fluid mass and drags behind the center of the globe. Thus all the continents move westward a trifle with each passing day. Or, looked at from a different point of view, the surface of the earth fails to turn eastward as fast as its center spins toward the sun.

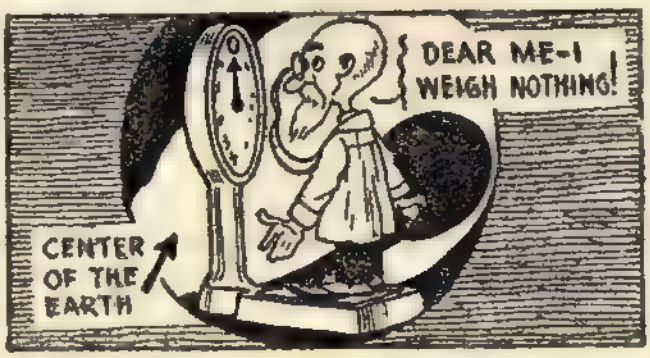
THE HOTTER THE SUN THE COOLER THE HOME

A COOLING system has been patented which is actuated by the rays of the sun. A mixture of water and ammonia flows through pipes exposed to the sun. The ammonia boils off and is condensed within the house. Upon evaporation it cools the surrounding atmosphere.

The patent calls for a closed system in which nothing is lost. In principle it differs little from the usual refrigerator which uses a small gas jet, but the source of energy employed by the new patent is the free energy of the sun's heat.

WHEN A MAN WEIGHS NOTHING

WHAT we call weight is the attraction of mass to mass. It is the most common effect of gravity. On the surface of the earth every part of the globe is exerting an equal force on every bit of matter on its surface. The direction of the force exerts a



pull toward the center of gravity, which, in a globe, is mathematically demonstrated to be the center.

If a man were able to penetrate to this point the mass of matter would be equally distributed in all directions and the pull from all directions would be equal, thus neutralizing each other. There would be no gravitational pull on the man in any direction and so he would weigh nothing.

More SCIENTIFACTS Next Issue

HE WHO MASTERS TIME

A Scientist Explores the Unchronicled Centuries for Future Life!

By J. HARVEY HAGGARD

Author of "Human Machines," "Faster Than Light," etc.

THE man paused to stare at his image in the mirror. The illumination was not of the best, being furnished mainly by the electrical flashing of lianalike tubes that coiled centrally in the room, but it was adequate to reveal the trembling of his hands. His face, almost cadaverous in its tired eagerness, peered back. Dark lines of exhaustion sagged beneath his eyes, and his lips were bloodless, without expression, even though the eyes themselves were as alive as two burning embers.

Richard Sauger clutched at the edge of the wash basin to still the agitation of his hands. For a moment he closed his eyes and stood rigid, although every muscle in his body was protesting against any further effort at self-control, and felt the exultation seeping within the fiber of his soul. It was odd, knowing triumph, after all these years. Yet there was the little lead box at his feet. He had stood for an interminable time, staring at it as its rectangular outlines lay swathed in the changing radiations within the vortex of the coils. Watched as it grew filmy in the violet and disap-

Crystalline substances jutted transparent angles in a confusing panorama

peared as though it were a ghost. Watched it re-form at last, loom like a wraith, and then take shape.

His own eager hands had jerked open the lid, and there were the two white rats, safe and unharmed, thrusting their curious little pink noses up calmly, unaware of the tremendous import of their recent venture.

The moment had arrived. Richard Sauger stood upon a threshold that had long awaited his footsteps. All of that satisfaction which comes from a life well spent was gathered tumultuously in his breast as he stood there with his eyes closed. His dream had been built from an unreal image, but he had been convinced that his equation of duo-quadrant lineations had been substantiated, even from the first embryonic assumption, in regards to the dimension commonly referred to as Time. Time, the invisible, the insubstantial, was solidified at last.

Its inexorable stream could be turned aside for those who chose to direct it. There was but one disturbing factor in his conquest of an enigma that had heretofore baffled all mankind. That lay in the increased proportions of the small lead box.

The inflation in size had been almost infinitesimal, yet the micrometers had registered the difference again and again, until even he would not deny the expansion. After all, it was unimportant. Other things that mattered were at hand. He could not pause, even to eat or sleep, now that the new conception lay fresh within his mentality.

Time, the indispensable fourth dimension, lay within his very grasp, ready to become something to bend to his will. It gave him a sense of illimitable power. The divine exaltation of an explorer who has brought new domain into the realm of knowledge held him for that long moment.

WHEN he opened his eyes he saw the folded newspaper where it had dropped on an upended box. He could see the heavy imprint of the headlines, even though the greenish light flickered till it burned his eyes:

WAR DECLARED IN SOUTHERN EUROPE!

How futile that sounded! How it brought man down from his pedestal to think of millions squeezing out their pitiful lives on the continent across the seas while he stood before something so vast that all humanity was dwarfed into insignificance. War in Europe! Would men never become civilized? Would they never ascend to a mental status whereby they could benefit from the powers of science?

War indeed! Richard Sauger stalked beyond the folded paper with no second glance, and began hurriedly to don the lead garments that lay on a bench. Almost without realizing it he pulled the heavy trousers up high on his waist and strapped them there, then shouldered the upper cloak of metal, with its square vision panels of quartz and the tiny atmosphere tanks that settled down comfortably on the broad muscles of his back.

Lead mitts that hooked high over the sleeves completed the outfit. As the hiss of inner air came from the tanks he stood clothed in the grotesque sheathing which would bar those harmful emanations from his body, even as the lead box had protected the white rats.

He breathed quite heavily until the air flow was regulated. Then he inhaled deeply, for excitement was pumping blood through the veins at a rapid pace and his lungs labored with the exertion. His eyes, staring through the quartz, did not pain him now as he looked straight at flashing arcs that dipped and swayed around the high voltage rotors.

Even the direct glare of the central coiling tubes could be withstood, as well as the infra-heat rays that were radiated back from the ceiling. He stalked forward, swallowing the dry feeling from his throat.

Out of the field of contrasting light and darkness a bulky figure moved. It was one of the assistants, garbed similarly in a leaden helmet, who held a questioning mitt before his face. Richard nodded and gestured toward the central dais with its cylindrical

tube of lambent wave-flow. The eyes behind the quartz vizor of the other helmet seemed frightened, but the assistant nodded his understanding.

Two others, looking like thick black shadows, watched as Richard Sauger stalked toward the cylinder of light-flame that seethed in the central vortex. He paused once, just before he stepped through the outer wall of cold fire. His face was icy with sweat, but he wasn't afraid. No, he wasn't afraid. But, good Lord! who could keep from feeling shaky at a time like this?

He bit his lips and strode the last two steps hurriedly, walking in a solid cylinder of light-flame that shot up from the brassy electrode upon which he stood — a light that disappeared in a whirling tassel of flame toward the upper instruments. He raised his arm high to give the signal.

There was no shocking sensation, though his body tingled and the sweat dried, leaving his flesh hot. The cylindrical haze of light deepened suddenly, became transparently violet, and then it too was gone, taking with it the outlines of the inner laboratory.

Richard Sauger was traversing a short-cut across the stream of time that no other terrestrial being had ever negotiated in the known history of mankind. A flickering gloom filled the abyss above his head as he swung through a void of space. Across his meridian flashed a solid ring of substance that appeared on the horizon to the east and disappeared toward the west. Inside his helmet he chuckled, and the eerie sound was quite sepulchral.

HE stood on a flat plain that undulated gently. That much was understandable. The surface of the earth, if it really was changing rapidly, had become a mere blur to his senses. The solid ring of substance across the sky was the sun, traveling at a prodigious rate that kept pace with his transit through Time. The retina of the eye caught its image as a solid ring, so swift was the earth's rotation. As the seasons altered the ring shifted lower or higher across the horizon, that was all.

But suddenly the ring dwindled, was gone, and a saffron body had swung up into the sky, hanging like a toy balloon. At first Sauger thought that he had come to a stop, but immediately he realized the true significance, for the undulating terrain of the earth had not ceased its ponderous swaying.

"This is something!" he exclaimed. "Millions of years have gone by! The tidal reactions have braked Earth to a stop, even as science predicted, and one face of the earth now turns always toward the sun."

He was assailed by a wild unreasoning fear, for the sun was acting very strangely. It stood in the blackening void like a torch running out of fuel. Sputtering flames dripped from it into the abyss, and suddenly it disintegrated. An impenetrable darkness descended.

How long his body traversed infinite distances he could not have known. His senses conveyed the futility of even pondering what he had seen. At times he seemed to be floating through a fluid blackness. His body swept along cosmic currents that spanned universal distances in a single, vertiginous instant. His mind cringed before alien sensations that were utterly without meaning.

At length he came to rest. A soft light hung over the horizon of a newer world. Solidity emerged beneath his feet. A smooth metallic expanse lay beneath his leaden soles. He looked across the serrated terrain and wondered how far through time he had traveled.

Even as the thought swept his mind his surroundings changed nightmarishly—not with the infinite changes of Time's rapid progression, but with an internal metamorphosis quite alien to the natural substance that had composed Earth.

The metallic horizon was suddenly pierced by long needlelike spires, among which crystalline substances grew swiftly to mammoth proportions, jutting transparent angles in a confusing panorama. But as he stepped forward these images dropped like a mirage and were shattered.

A grotesque forest surrounded him, spreading zigzag branches across the bickering luminosity of the heavens.

Even the essence of matter had changed. That which stood about him now was as much like lambent radiation as material substance. The glittering metalline substance had rippled up into an iridescent array of solvent matter that baffled his mentality. Shocking changes came that seemed hardly to register within his brain. Was this that far future of which mankind had dreamed?

His breath was heating the interior of the helmet. It was a long time since he had left the laboratory. Madness clawed at his brain and shrieked into his consciousness. Odd sensations surged through his being. He thought of Earth, strangely enough, while the substance about him was again being rearranged into a titanic jumble of crumbling blocks that hemmed him in. Earth and its futile little humanity! Earth and its men at war!

He could almost see those men, leaping across black benches; shellfire mushrooming against the upper blackness; shrapnel screaming; bayonets thrusting through flesh and dripping red; men reeling from poisonous spumes of gas. How distant that was!

ODDLY enough, Richard Sauger was sobbing. He struggled onward with a new determination amidst the bewildering shapes that arose and towered and flamed at every side, and now his eyes were seeking something not so alien. A vast solitude had crept upon him, here in the weird wastes of this ineffable world. Not always did he see those podlike incrustations, those knotted ranges that were suddenly liquid in appearance; instead, he tramped across a black shifting field with others, where the muzzles of cannon belched fire and smoke and lead, and machine-guns chattered rivers of death and hell opened arms like the talons of an animate monster. Rivers of red swept past his eyes; gory masses of crushed metal lay piled against the sky, countless cadavers lay across the mud and filth of what he trod.

It was understandable to Richard Sauger that he could not comprehend all that he beheld, for he had bridged an abyss that was inconceivably distant and removed from the mundane sphere, but somehow this fantasy of death and fury was the oddest aspect of all his sensations. How long he trod onward, seeking even remote vestiges of some object that would strike a harmonious note in his brain, he did not know, even though he throbbed to a dull obstinacy that drove his body on like an automaton.

Those shifting panoramas were as arid and cold as the deserts of the moon.

His soul anguished for the pitiable fight of mankind for existence in that far past, and despised when it came to realize that, after all, it had been and would be in vain.

Back in the laboratory the assistants timed the transition for five minutes. When the minute hand came from the number 11 to 12 in a clock dial on the wall the lead-armored men manipulated counter levers, and the intense ultra-violet glow deepened once more.

There, standing awkwardly in the center of the swelling cylinder, was the grotesque lead-sheathed figure of Richard Sauger, seemingly about to collapse. The figure outline became darker, and stumbled abruptly from the dais, to be caught in the eager arms of the assistants.

With the instruments black and lusterless the laboratory took on a new coloration. Electric lights, swung from the high ceiling, gave a natural hue to the white countenances of the assistants, who had hurriedly discarded their heavy sheathings in the absence of noxious radiations. Richard Sauger lay with his naked face bared to the clearer light, and the man who bent over him was rubbing cool water over his forehead.

For several moments he lay with unseeing eyes. Finally he sat up, without speaking.

"Well, sir?" It was one of the assistants who spoke, his voice husky with anticipation. Richard knew what was in the mind of each of them, but

for the moment his mentality was so sluggish that he did not care to answer. Presently he aroused himself and went over to the wash basin. He hesitated again, dubbed his hand over the back of his neck, and loosened the collar. His foot brushed against the lead armor that lay like an empty shell on the floor. Then he sighed and looked defiantly about.

"I'll have a hard time explaining," he said, choosing each word and pausing at intervals. "In the first place, it's doubtful if the human mind is capable of absorbing things quite out of its normal zone, and what I saw might not have appeared to another as it did to me. There's no way to explain a new color to people who've never seen it; it's like telling a deaf man how to hear by making signs with the hands. That's the way I felt. I guess the transit was a success all right."

HE brushed the newspaper from the box and sat down rather heavily.

"I thought at first that it might have been a sort of hallucination," he said at last, after attempting rather vaguely to reconstruct the memories of his confused consciousness. "It doesn't make sense! It was like a nightmare that you can't quite grasp, but I kept looking for some sign of man on that future world, or of some evidence of man's habitation. I felt that somehow, despite the lapse of time, some evolutionary adaptive of humanity would be in that future world. But we'll have to alter our computations to suit a more standardized fact. There weren't any men in the world I glimpsed. It wasn't composed of the kind of matter we've had anything to do with. I'm not even certain that it was matter.

"But we've succeeded. That's the main thing. Our fourth-angle deviation from the six conceivable electronic dimensions did the trick all right. I went forward in Time. But we failed to take into consideration the *expansion* of matter as we know it. I refer to the expansion of the universe. You are entirely aware of that phenomenon. My trouble was that when I went through Time the stature of my body remained practically the same as contrasted to the enlargement of the Universe. As millions of years receded behind me, the Universe expanded. The internal distances between the electrons of the atoms, as well as matter itself, was inflating simultaneously. As long as my projected body clung to the broadening earth I had some semblance of similarity with which to gauge my conjectures. Later, the Universe must have increased beyond all proportions.

"Eddington pictures an oscillation of universal proportions, in which the matter of the Universe is altering intermittently between the state of highest compression in a small area and a condition of extreme tenuity in an expanded area. We can readily imagine that the electrical particles, which may consist of a sort of radiation, would inflate to enormous dimensions as comparable to the present size of my body. On the other hand, it is possible that the world I stood upon was at the other end of the handle, so to speak. It might have been the Universe that had expanded and then deflated to the state of ultimate compression. At such a period its mass would be sufficient to bend the light waves back to its own attractional surface, thus explaining the presence of illumination on this future planetoid body and the lack of luminaries.

"I can even attribute that which I perceived to a sort of thought-reflection, tenable in the absence of a conveying medium in this super-matter astral body. Every object I witnessed, or thought I witnessed, can only be portrayed as comparable to some 'terrestrial' object, even though there is much that I am unable to explain.

"My inability at voicing these descriptions is quite conceivable. What I landed on was quite probably an atomic planet of infinitesimal size, a mere particle of an electron on the present earth."

Next Issue: WANDERERS OF THE VOID, by Dr. Arch Carr

ZARNAK

"THE HUMAN GUINEA PIG!"

By Max Plaisted

AFTER INCESSANT WARS AND A DEVASTATING PLAGUE, THE EARTH LAPSED BACK INTO CONDITIONS NOT UNLIKE THE MIDDLE AGES

NOW, IN THE YEAR 2936 A.D., I, ZARNAK, LAST SCIENTIST OF EARTH, SET OUT IN MY SPACEPLANE IN SEARCH OF DESCENDANTS OF A MIGRATION FROM EARTH IN 2328 A.D. I HOPED THEY MIGHT HAVE DEVELOPED INTO A SUPERIOR RACE ---- AND THAT WITH THEIR AID WE COULD RESTORE THE EARTH TO ITS ANCIENT GLORIES.

A METEORITE THREW ME OFF MY COURSE -- AND I FINALLY LANDED ON MERCURY. HERE AN INSANE RACE OF QUEER PEOPLE, WHO INHABITED THE DARK SIDE OF MERCURY, CAPTURED ME. THEY WERE ABOUT TO SACRIFICE ME TO THEIR GOD THARK, KING OF THEIR TRIBE, WHEN A GREAT BIRD PUT THEM TO FLIGHT AND CARRIED ME AWAY, STILL BOUND TO THE STAKE!

THE GREAT BIRD CARRIED ME ON, TOWARD THE LIGHT SIDE OF MERCURY

THE BIRD CARRIED ME ALONG THE THIN BELT OF MERCURY. SINCE MERCURY ONLY TURNS ONE SIDE TOWARD THE SUN, THE OTHER SIDE IS IN INTENSE DARKNESS, HOWEVER, A THIN BELT RUNS AROUND THE PLANET, BETWEEN THE INTENSE HEAT OF THE ONE SIDE AND THE COLD OF THE OTHER, AND HERE THE CLIMATE IS QUITE TEMPERATE AND CONDITIONS ARE LIKE THOSE ON EARTH. WE WERE APPROACHING A GREAT MOUNTAIN --- PART WAY UP IT I COULD SEE A CITY

HERE COMES THE ROC, VARTA. HE HAS A QUEER PERSON WITH HIM!

INSTRUCT HIM TO BRING HIS PRISONER HERE!

VARTA --- LAND HERE WITH YOUR PRISONER!

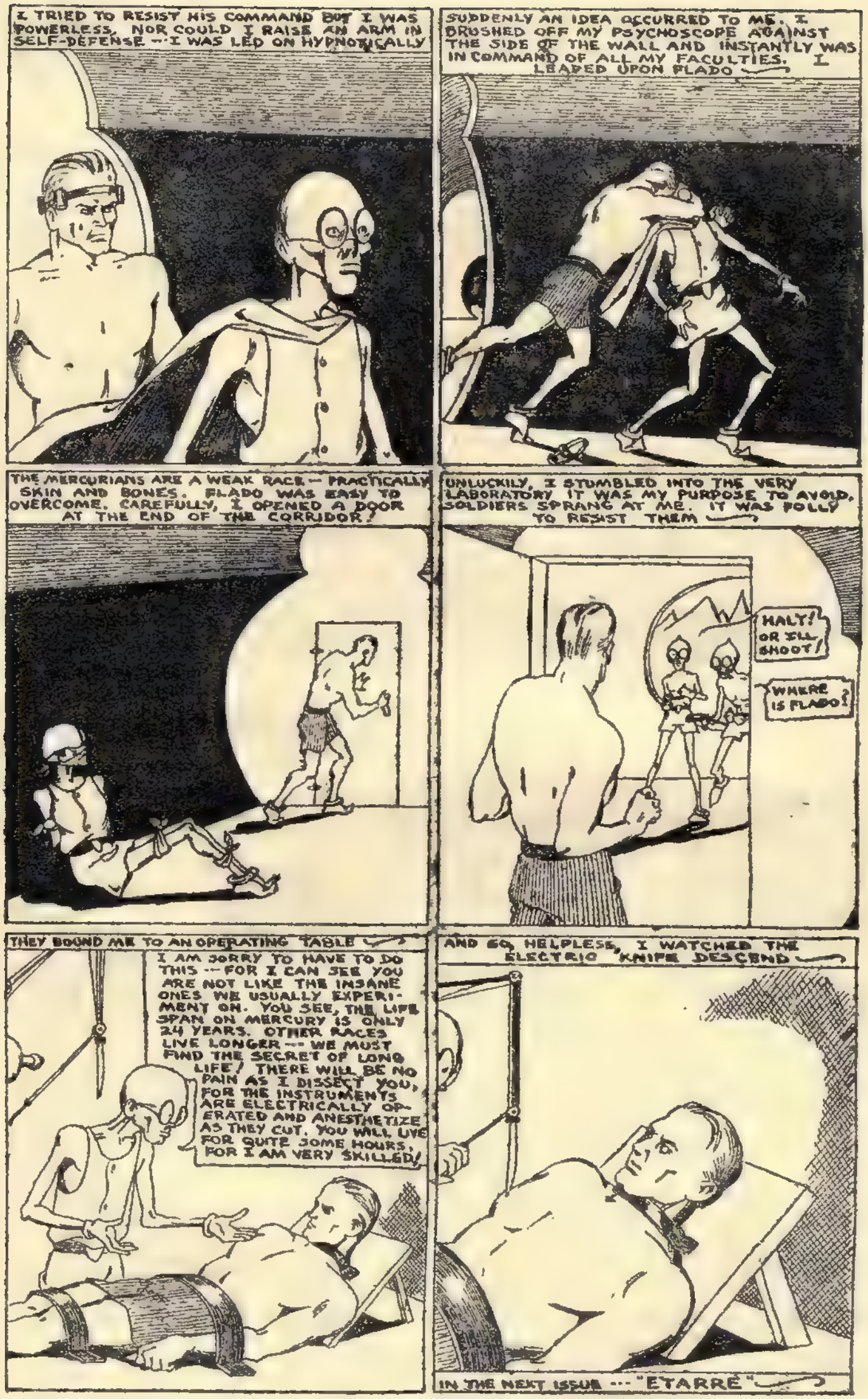
OBEDIENTLY THE GREAT BIRD BROUGHT ME BEFORE THE MERCURIANS. I COULD COMPREHEND THEIR STRANGE LANGUAGE PERFECTLY --- BUT COULD NOT UNDERSTAND HOW THIS WAS POSSIBLE -- FOR THEY SPOKE A DIFFERENT LANGUAGE THAN THE MAD PEOPLE. BUT, GAGGED, I COULD NOT ANSWER THEM

A STRANGE SPECIMEN ---- CERTAINLY NOT INSANE ---

---- BUT LONG LIVED!

[Turn Page]

THEY CLAMPED WHAT THEY CALLED A PSYCHO-SCOPE ON MY HEAD, AND ADDRESSED ME —
NOW YOU CAN CONVERSE WITH US. FOLLOW ME TO OUR SCIENCE COUNCIL ··· WE WILL DISCUSS YOUR CASE!
I AM AT YOUR SERVICE. I'M ZARNAK ··· FROM EARTH!
THE PSYCHOSCOPE TRANSFERRED THOUGHT WAVES INTO PICTURES —
PROCEED, EARTHLING, AND TELL YOUR STORY —
AND SO, BY MEANS OF THOUGHT PICTURES, I TOLD THEM OF MY SEARCH
FRANKLY, I TOLD THE MERCURIANS THE WHOLE EARTH STORY AND MY PLANS FOR THE FUTURE
AND NOW, I THANK YOU FOR SAVING ME. I SHOULD LIKE TO RETURN TO MY PLANE, REFIT IT WITH PROVISIONS AND BE ON MY WAY —
CERTAINLY, EARTHLING ·· IN THE ··· AH ·· NEAR FUTURE YOU MAY RETURN TO YOUR PLANE BUT WE MUST ER—ER· INSIST YOU BE OUR GUEST FOR A VERY SHORT TIME!
YOU WILL DRESS YOURSELF ··· THEN AWAIT COMMANDS
SUDDENLY ONE WALL RECEDED INTO THE FLOOR. A TALL MERCURIAN STOOD BEFORE ME. HE COMMANDED ME TO FOLLOW HIM —
I AM PLADO ·· HEAD SCIENTIST. FOLLOW ME TO THE LABORATORY! I'M GOING TO EXPERIMENT ON YOU!


I TRIED TO RESIST HIS COMMAND BUT I WAS POWERLESS, NOR COULD I RAISE AN ARM IN SELF-DEFENSE --- I WAS LED ON HYPNOTICALLY
SUDDENLY AN IDEA OCCURRED TO ME. I BRUSHED OFF MY PSYCHOSCOPE AGAINST THE SIDE OF THE WALL AND INSTANTLY WAS IN COMMAND OF ALL MY FACULTIES. I LEAPED UPON FLADO
THE MERCURIANS ARE A WEAK RACE --- PRACTICALLY SKIN AND BONES. FLADO WAS EASY TO OVERCOME. CAREFULLY, I OPENED A DOOR AT THE END OF THE CORRIDOR.
UNLUCKILY, I STUMBLED INTO THE VERY LABORATORY IT WAS MY PURPOSE TO AVOID. SOLDIERS SPRANG AT ME. IT WAS FOLLY TO RESIST THEM
HALT! OR I'LL SHOOT!
WHERE IS FLADO?
THEY BOUND ME TO AN OPERATING TABLE
I AM SORRY TO HAVE TO DO THIS --- FOR I CAN SEE YOU ARE NOT LIKE THE INSANE ONES WE USUALLY EXPERIMENT ON. YOU SEE, THE LIFE SPAN ON MERCURY IS ONLY 24 YEARS. OTHER RACES LIVE LONGER --- WE MUST FIND THE SECRET OF LONG LIFE! THERE WILL BE NO PAIN AS I DISSECT YOU, FOR THE INSTRUMENTS ARE ELECTRICALLY OPERATED AND ANESTHETIZE AS THEY CUT. YOU WILL LIVE FOR QUITE SOME HOURS, FOR I AM VERY SKILLED!
AND SO, HELPLESS, I WATCHED THE ELECTRIC KNIFE DESCEND
IN THE NEXT ISSUE --- "ETARRE"

INVADERS FROM THE OUTER SUNS

A Complete Novelette of Cosmic Exploration

From the group of ten plant-creatures two seized them

By FRANK BELKNAP LONG, Jr.

Author of "Cones," "Sky Rock," etc.

gently in their tendrils and lifted them from the ground

CHAPTER I

Flight from Saturn

JAMES ROSS leaned against a crystal pylon and fingered the conical holster of his subatomic blast pistol nervously. Invisible death stood by his side and the very air he breathed was fraught with menace.

The Saturnian relaxation terminal was small, crowded, and permeated with the odors of cheap *dilitis* syrup and rank tobaccos. The space ship pilots who lounged there without insignia on their begrimed and tattered uniforms were men of unsavory reputations. Two-thirds of them were blackguards, thieves and murderers. The rest had displayed white feathers in the black, frigid gulfs between the planets.

Virtually everyone in the terminal knew Ross by reputation. The young American was a senior lieutenant in the trans-Saturnian division of the Interplanetary Police Patrol. Tall, lean, weather-bronzed, with clear grey eyes and sharply molded features, he had assumed an ingenious disguise which protected him from the wrath of his enemies.

He was clad in a soiled and shabby space-pilot's uniform of black rubberized cloth. His rust-colored solar boots were caked with the yellow clay of the Titan mine settlements, and the mesh-wire helmet which dangled by a thin strap from his shoulder was tarnished and misshapen. He had smeared his features with black engine grease and deliberately assumed an expression of drooling idiocy.

The picture he presented was a familiar one. He looked in all respects

A Brigand of Space Speeds Through the

Starways to Flee an Earthman's Vengeance!

like a hard-bitten miner from the little Saturnian satellite Titan, hopelessly drunk on *dilitis* syrup.

Ross knew most of the reveling spacemen. There were murderers in the terminal the law couldn't touch because of imbecile immunity treaties or lack of legal evidence. There were men there who had endured imprisonment in the Martian penal camps, but who were out on parole now and openly scornful of the Interplanetary Police.

The nations of Earth were constantly at loggerheads as to the most effective method of policing the planets, and the Patrol had the difficult task of enforcing a code of interplanetary law which was moth-eaten, and as variegated as a patch-work quilt. Through the big and little holes in it big and little scoundrels could wriggle with impunity.

But Ross was determined that a certain scoundrel should not wriggle through. So far luck had favored him. No one had recognized him, and sitting at a metal table a few feet from where he was standing was the blackguard in question.

Justin Nichols' pale and shadow-haunted face was set in grim lines as he drained *dilitis* through a thin glass tube and watched the carousing spacemen at adjoining tables. He was entirely alone. Most of the other outlaws had their arms about the slim waists of dancing girls as they swayed drunkenly above the tables.

Still fingering his blast pistol Ross crossed suddenly to Nichols' table, pulled out a chair, and sat down. Justin Nichols started. His eyes, boring into those of the Patrol officer's, widened abruptly in recognition and alarm. With an oath he started to rise.

"Sit down, Nichols," Ross said. "Pretend you're glad to see me."

He tapped his blast weapon holster significantly.

"Pretend, Nichols. If you make one suspicious move I'll sear you!"

Nichols subsided in his chair and sat staring sullenly into the hard, level eyes of the Patrol lieutenant. A dull flush suffused his cheeks.

"You can get up now, Nichols," Ross smiled grimly. "Walk slowly toward the door and keep remembering what I told you."

Reluctantly Nichols obeyed. Ross' nervousness increased as they passed within inches of ruffians who were killers by instinct and choice. They were still in the midst of the tables near the center of the terminal when a slim, frail girl appeared in the doorway.

A mechanic's lounge suit draped her slender form. Her skin was radiantly fair; her features indescribably beautiful. Her flowing, copper-colored hair flamed in the glow of the cold light lamps as she slipped swiftly through the doorway and stood for an instant in the shadow of the pylons, staring at Ross and the other.

ROSS was so intent on his captive that he did not perceive that her features were agitated with alarm, that she was breathing fast. His inattentiveness nearly cost him his life. The girl suddenly raised her arm and pointed at him.

"That's Ross, of the Interplanetary!" she exclaimed vehemently. Then her voice rose hysterically. "He's been spying on us! Stop him, someone! Stop him—"

Her warning had a galvanic effect on the *dilitis*-drunk habitués of the terminal. At a dozen tables sinister figures stiffened in swift fury. Ross caught a frightening glimpse of brutal, leering faces aflame with hate. Men to whom the spilling of blood was casually instinctive leaped to their feet with fierce oaths.

Ross was taken so completely by surprise that for an instant he stood without movement. Then he whirled, whipped out his blast pistol, and sent a searing, hissing cylinder of ruby-red flame spurting toward the ceiling of the terminal.

The cylinder pierced the cold-light lamps with a positron blast that rocked the little building from roof to floor. Trillions upon trillions of massed subatomic projectiles crashed against the insulated lamp mounts high overhead, and cascaded in spreading sheets of hissing, sputter-

ing energy down the terminal's quaking walls.

There ensued a deafening detonation as the fragments of the cold-light lamps fell in glowing showers between the tables. The fragments spun about on the floor in a mad dervish dance for an instant. Hundreds of tiny pinpoints of light were lashed into quivering activity by the energy thrust of disorganized and escaping electrons. Then the firefly pageant dimmed, vanished. Utter darkness engulfed the terminal.

The dancing girls screamed as the darkness descended. Feet scraped on the corrugated metal floor. There was a volley of oaths and the crash of tables overturning. Ross retreated a pace, his blast weapon gripped tightly in his right hand. In the darkness it was hard to distinguish between sounds; still harder to move swiftly in a straight line.

On all sides infuriated killers were seeking him out. He could hear the swift paddings of their feet all about him. The door was a faint, glimmering square of violet light. Hands clutched at him as he suddenly reversed his direction and started toward it.

For several yards he encountered no impediment. Then he stumbled into a resistant bulk that swore violently and lashed out at him. Luckily the fist of the ruffian missed his jaw by a narrow margin. Ross caught his assailant about the waist, lifted him into the air, and crashed him violently backward against a pylon. Then he lunged forward again.

He was within three yards of the doorway when he tripped over an overturned chair and went sprawling out on the floor. He rose swiftly, but before he could get his body moving again fists thudded against his ribs. Swiftly he whirled, leaped backward, and flailed the air with the massive, flaring muzzle of his blast pistol.

He heard a sickening crunch as the slashing metal thudded against a human skull. In ghastly silence the dimly outlined form of his assailant swayed an instant, then crashed to the floor. Immediately another ruffian blocked his path. Ross raised his knee, and rammed it with violence into a quivering stomach. The opposing bulk melted away with a groan of pain and rage. The next instant Ross was through the portal and out in the clear, oxygenated air under a canopy of skyflame.

HIGH above his head the immense crystal dome of the Saturnian skyport shone frostily beneath heaven-spanning rings of bright, swarming meteors. Mile-long oxygen cylinders turned slowly on both sides of him as he sped along a pedestrian airlane toward the space ship terminal at the far extremity of the dome. From jets in the lateral sections of the huge, black cylinders the life-sustaining air spurted in continuous blasts and circulated freely throughout the length and breadth of the skyport.

The Saturnian skyport was the largest in the Solar System. Under the meteor-girdled skies it shone with a luster as silvery and resplendent as the Earthmoon's sheen, or the glowing face of heaven-climbing Titan. Its rounded tower was a tiny pinpoint of bright glory between a Charybdis of swirling *detritus* and a Scylla of towering granite. Colossally behind it loomed the stupendous crags and buttressed ledges of desolate mountains. Dismally before it there stretched to flame-wrapped horizons a bleak, windlashed desert of pulverized lava.

Neither the mountains, which surpassed the mightiest of Earthmoon's peaks in magnitude, nor the bleak, forbidding desertland were suitable abodes for the life of Earth. Deadly methane and ammonia gases surged on the tainted air and the far horizons were lurid with the light of perpetually erupting volcanoes.

Within the skyport the enormous, mile-long cylinders preserved a balanced atmospheric pressure under a dome of palely opalescent cyclisite crystal. Inside the great structure the bleak, grim and terrible Saturnian wastelands impinged visually on the senses, but their menace was illusionary so long as the skyport resisted the assaults of storm and soilquake.

At one end of the skyport clustered the relaxation terminals, little glittering domes within the huge mother dome. At the other were the bright cobalt glass berths of huge space transports and tiny solo craft no bigger than the stratosphere planes which darkened all the skies on distant Earth.

Ross was certain that Nichols had taken advantage of the darkness and confusion in the terminal to slip out ahead of him and make for the space ship berths. Nichols' little ship was moored next to the eighty ton transport *Ganymede*, on one of the public take-off slides used by solo craft.

Across the bleak, interplanetary voids from far-off Jupiter Ross had pursued Nichols' craft. On arriving at the great dome he had zoomed his own little vessel into a neighboring berth and swiftly departed on a round of the relaxation terminals in quest of his elusive quarry.

As he raced over the sloping skyway he cursed the slim, frail girl who had betrayed him to the rogues in the terminal. He did not know who she was. He had never seen her before. But he cursed her as he sped until his breath was coming in wheezing gasps.

All about him now immense hulks towered. He saw the silvery and resplendent bulk of the thousand-meter titan of the spaceways *Erubus*, and the Martian armored cruiser *Klatan*, with her oblong triple-ports reflecting the skygleam of a thousand little moons. He moved swiftly beneath frowning, dark expanses of metal, passed through blue shadows which flickered like the lashing reflections cast by comets' tails on the mist-shrouds of the larger planets, and emerged at last on the wide, central platform at the base of the public runways.

The platform glowed dimly in the opalescent light of immense meteor belts and swift-circling little moons. Ross stopped an instant to regain his breath; then ascended swiftly over footmounts cut in the metal to the tiered runways above which supported the little solo craft of adventurer pilots and independent miners from the Titan ore concessions.

At last Ross reached the take-off slide where he had left Nichols' vessel. Gasping for breath, he stood staring in bitter chagrin at an empty expanse of shining metal. The little craft was gone! Breathing curses he turned and ascended swiftly to his own small craft which rested on the tier above.

A young man of eighteen was standing beside Ross' gleaming vessel. He wore a mechanic's lounge suit, short solar boots. An ultra-violet ray shield hid the upper part of his white face. His jaw was bruised and swollen, and blood was oozing from a cut on his mouth. He staggered a little as Ross came toward him.

"So you tried to stop him, eh? Good lad!"

The youth nodded.

"I fought him till he knocked me down," he said. "The girl helped him. She's a she-devil, sir."

Ross' eyes lit up.

"A girl, eh? The same girl, I'll wager. Get inside, Bob. We're going after them."

CHAPTER II

The Death Ray

FIVE Earthminutes later Ross' little vessel vibrated from bow to stern; then crawled steadily down the runway in a snail-like glide. Moving scarcely a foot a second it zoomed upward toward the summit of the dome.

As it neared the airlocks it bisected a photoelectric beam which automatically set the massive ejection mechanism in motion. The little ship was swiftly drawn into a compartment devoid of air, held suspended an instant in vacuum, and then shunted outward into the sub-zero, methane-tainted atmosphere beyond the skyport.

As the airlock closed behind the tiny craft the whirring rotoform propellers which had lifted it from the runway ceased to function and the freshly-banked infra-atomic blast engines in its basal compartments exploded with a roar. The initial acceleration had not exceeded a few

thousand feet a minute. But now its speed was increased enormously. Up from the volcano-reddened crust of the ringed planet the little vehicle shot with a velocity which steadily mounted till its outer plates grew red, then white hot.

Within the heat-resisting inner shell of the incredibly speeding vessel Ross sat staring out through an observation window of inches-thick quartz at a titanic blue arc shot with gold. This bright inner ring of Saturn, composed of millions of tiny asteroids, was half a million miles in circumference. In the firmament beyond it six of Saturn's ten moons hung pendulously suspended, two green, three yellow and one a blood-red ruby against the diffuse glory of the far-flung constellations.

In five minutes the vessel had attained an altitude of one hundred miles. Ross was sitting before a control board grimly manipulating dials and levers when young Robert Brooke entered the pilot chamber. He crossed swiftly to Ross' side.

"I've located them in the telescopic receptor!" he exclaimed, excitedly. "They're heading for Hyperion!"

Ross swung about in his metal pilot's chair, his face suddenly tense and incredulous.

"Good God!" he muttered. "Are they mad? I'd rather land blind in some foul, black bog on Rhea or Japetus. Even if they slip away from us in the dense surface fogs they'll find hell awaiting them when they step out through the gravity ports."

Brooke nodded grimly. He had read about Hyperion in the navigator's almanac. It was the backwater moon of the system. It had sufficient density to retain oxygen, but the air was so tainted with deadly carbon monoxide gas you couldn't breathe it without a Dulo filter. Under the fog blanket there was a scummy surface film of nasty, malignant life. Corrosive spores, flame-tongued leech weeds. The last exploring party had landed there blind in 2078. Six months later a Martian rescue crew had picked up three survivors.

Three haggard, gibbering skeletons, with shriveled flesh gangrening from uncauterized leech-weed abrasions. The little moon was a kind of vegetable inferno, a veritable hell-garden where alien forms of life flourished noxiously in an atmosphere impregnated with death.

"If we follow them to the moon's surface we may crash in the fog," said the youth, apprehensively. "I thought —I thought we could try to reach them with the Sillo-beam. I synchronized the S-tube range with the visual field in the receptor screen.

Ross glanced at him sharply.

"Took a lot on your shoulders, didn't you?" he exclaimed. "Are you afraid to land on Hyperion?"

Brooke bit his lips, reddened.

"I think I understand," Ross laughed. "A girl, eh?"

The youth nodded.

"We are to be married next month. In Auriga City, Venus. I have no insurance papers, and if anything should happen to me—" His lips set grimly.

Ross descended from the pilot's seat and gripped his arm.

"All right, Bob. I understand. Just take my place now. Watch the pressure gages. If the gravity stabilizer slips a millimeter, regrade it."

THE youth nodded and climbed into the pilot's seat, while Ross slipped swiftly from the little chamber. He moved down a narrow corridor and, descending a spiral stairway in the depths of the vessel, emerged into the compartment which contained the telescopic receptor screen and the switchboard which controlled the long-range Sillo-beams.

On the green-lit visual screen bright images flickered. The screen was vertically suspended between terminus joints in the summit of a massive electrothermal pillar which rose obliquely from the floor of the compartment. The flickering images were conveyed by heat-wave transformation from a powerful reflecting telescope in the vessel's prow.

The images were very bright and clear because there was little loss of light in the nearly gasless strato-

sphere five hundred miles above the planet's surface. Ross crossed to the image screen and studied it intently. Brooke had located the fleeting space ship with competence and accuracy. Near the center of the screen the mist-enveloped disc of Hyperion shone with reflected meteor light. A little distance from the rim of the dully-illumined moon was a tiny, black midge-shape gyrating in the tenuous pressure-drifts of an airless ether.

Ross studied the tiny, cigar-shaped vessel for an instant with set lips. Then he stepped to the illuminated switchboard which controlled the Sillo-beams. If luck favored him, he could stop that fleeing vehicle dead in space. The Sillo-tube could throw a paralyzing ray of magnetically energized light twenty thousand miles across empty ether. The light would envelop the little craft in a blinding shell of force and hold it immovably suspended above the mistenshrouded satellite.

Ross grasped a small, black dial, twirled it about between his fingers. Five Sillovolts of energy flowed into the Sillo-tube; then ten, then fifteen. The vessel vibrated as the great, space-piercing beam streamed outward from its hull toward the tiny fly-speck of matter thousands of miles away.

Swiftly Ross returned to the receptor screen; stared anxiously. Relief flooded his being when he perceived that the beam had found its mark. With deadly accuracy it had streamed across space and enveloped the fleeing vessel. He had scored a hit!

Nichols' ship was now utterly motionless in space. Ross wiped moisture from his forehead; laughed loudly in relief and exultation.

"Good lad," he muttered, addressing the wall in lieu of young Brooke, but thinking of Brooke. "You figured the range to a T! We've got Nichols! We've got the little vixen who's with him! We've got them both. We've—"

Suddenly he gasped. Out from the little vessel near Hyperion there shot a swift beam of blinding purple light. A Sillo-beam, *in blasting concentration!* The hue was unmistakable. Ross' eyes dilated in terror. With a cry he recoiled from the screen, as though even the image of such a beam could maim and kill. As he did so the little craft rolled sickeningly. There was a clang of tortured metal. All the lights on the Sillo-beam chamber flickered, dimmed.

Ross was thrown violently forward against the switchboard. For an instant he clung to the edge of the massive panel, swaying groggily. Then he straightened, stood erect. Shook his head to clear it of dizziness.

A terrible fear was taking shape in his mind. The deadly beam had pierced the vessel, and passed onward through space. Clanging plates and dimming lights were the inevitable sequels of a direct hit. Fortunately the concentrated beam pierced space as a thin, lethal filament. It seared all flesh in its path, but its range was limited. It seared all flesh within a radius of a few feet.

With shaking fingers Ross lifted the audiphone on the switchboard before him, pressed it to his ear. For an instant he stood grimly listening. Then all the blood seeped out of his face, leaving it ashen. He swayed. In the pilot chamber above Robert Brooke was audibly moaning.

When Ross reached the lad's side after a frantic, tortured ascent from the bowels of the little vessel he found him slumped at the base of the pilot's chair. The beam had pierced his chest; seared him horribly. Burned fragments of rubberized leather mercifully concealed the lesser wounds in the blackened flesh of his arms and thighs. His lips were flecked with crimson froth as he tried to smile into the compassion-filmed, tormented eyes of the man kneeling beside him.

"She won't get—the insurance—now," he muttered, with a wrenching effort. "But I guess—it's—all part—of the game. I hope you get 'em, chief. The concentrated beam is—prohibited—Interplanetary law."

Ross nodded. He was close to tears, and could only murmur, indistinctly.

"We'll look after her, lad. The Patrol will look after her."

Brooke raised his face, succeeded,

despite his pain, in really smiling. Then the light faded from his eyes. His breathing became irregular, tortured. His chest rose and fell spasmodically for an instant. Then he uttered a little cry, went all limp. The smile returned to his lips a moment before his breathing stopped.

CHAPTER III

Circle of Slaughtered Men

IT was a grimmer Ross who returned to the observation window fifty Earthminutes later to watch the beam-suspended little vessel floating in the ether before Hyperion increase rapidly in size. With deep sorrow and reverence he had sent the flag-wrapped body of Robert Brooke out through a gravity port to a star burial in the night of space. He sat sad and watchful, feeling very lonely now, and, despite his youth, very old.

Of one thing he was grimly certain. He would overtake and capture Nichols' vessel. Solo space craft were too light to carry more than thirty Sillovolts of beam energy in their S-tubes. Nichols had shot his bolt, lethally, malignantly. Now Nichols would pay with his life. As for the girl—Ross' lips tightened. He would show her no mercy.

The tiny craft throbbed evenly through space, drawing nearer and ever nearer to the dimly glowing misty face of little Hyperion. The beam-suspended vessel was now clearly visible to the naked eye in the quartz observation window and Ross needed no telescope to discern its mist-enveloped outlines.

He was rebanking the blast engines with fuel sheets of re-energized electrons when a curving crescent of light shot from the mist on the little moon. Instantly Ross leaned forward above the controls, stared in breathless wonderment through the quartz window.

In the wake of the light something was rising from Hyperion's surface, a dark, wedge-shaped mass that moved obliquely through the ether with curious little jerks and regressions. Something about its contours and mode of progression was vaguely spiderlike as it scuttled up through the white opacity. Ross was so startled he forgot to breathe.

From the summit of the weird, irregularly moving wedge a thin ray of light crossed the Sillo-beam, in seeming immunity to its refractive repulsion. Then, suddenly, a startling phenomenon occurred. The Sillo-beam cocoon dissolved under the impingement of that other beam. It dissolved completely. The streaming radiance flowed off from the tiny craft's bow and stern and was dissipated in the ether.

Instantly the dark wedge grew very bright on its lateral side. Out from it there projected a secondary wedge of glimmering light which descended slowly toward the newly liberated vessel.

Suddenly Ross perceived that the wedge was transparent and unstable. The wavering, mist-enveloped face of the little moon was obscurely visible through it. As it approached Nichols' space ship its contours altered. It wavered nebulously; then buckled into billowing folds.

Ross' flesh went cold as his mind searched gropingly for an explanation of that strange encounter in space. Was the wedge mass deliberately trawling in the ether for the little vessel and its crew? Was the luminous, weaving projection a sort of net which the dark wedge was employing in its search for prey? Even as Ross stared Nichols' little craft was caught up, enveloped by the luminous folds.

Chills raced along Ross' spine. He stared in horror as the net enveloped the vessel completely. The next instant the dark wedge moved jerkily backward toward the luminous mists of Hyperion. Like a great, scuttling spider retreating into the white opacity of its lair, with its prey in a bright, dewy web of its own contriving.

Ross had braked his little vessel while the grim drama was unfolding. Now, as the dark, sinister wedge vanished in the mists above Hyperion,

he released additional fuel sheets into the basal blast engines.

Sitting tight-lipped at the control panel, he guided the little vessel down and down. Through whirling layers of atmospheric gases, through thin convexial stratovacuums which frosted the observation window despite the heat of the outer plates. At fifteen miles altitude he started braking his course. He shut off all but one of the atomic blast engines and swung the gravity-stabilizer toward zero. At five miles his acceleration had been cut to a blast propulsion minimum of three miles a minute.

AT two miles he shut off the blast engines; twirled the rotor dials. The little vessel circled slowly downward toward a world unplumbed. A world of blood-hungry leech-weeds, poisonous fungus growths, and a dark sky marauder that scuttled, spiderlike, out of white mists to trawl for men!

He landed safely in a rocky valley between two little hills that loomed bleakly forbidding in the green-lit gloom. The vessel settled comfortably on a black granite ledge abutting on a nearly level terrain.

When Ross came out through the open gravity port with a Dulo oxygen filter strapped to the lower part of his face he moved with grim purpose and yet, paradoxically, like a man entranced. He was in thrall to emotions that would have seemed incomprehensible to the adventurers and explorers who had trod Hyperion's soil before him. Though a sense of alienage and a premonition of horror oppressed his mind, his dominant thought was one of vengeance.

He had been cheated of his vengeance by the scuttling horror from the white mists. No foot as firm as his had ever trod this little world before him. No Earthman had ever moved as resolutely into the unknown or displayed more indifference as to what might befall him.

The little backwater moon had no glory skies. A thin green light poured downward from clouds that hid even the immense rings of its primary. Beneath Ross' feet the soil was as smooth and polished as a surface of glass. There were no tumbled stones here; no crevices or pitfalls to ensnare his feet as he progressed. All about him a tomblike silence reigned. Nowhere was there a suggestion of movement or echo of sound. The soil was curiously metallic in texture. A surface layer of glowing blue-green composed of tiny particles like sand overspread a more solid stratum which resisted the impress of his solar boots. Wisps of green fog came down into the valley, obscuring horizons and concealing the landscape directly before him.

He walked swiftly forward through the mist, driven by a compulsion which was more intuitive than logical. Yet he was sure that Nichols' vessel had been drawn by the raider from the mist into this or an adjacent valley. He had followed the captured vessel closely; had entered the mist directly behind it, paralleling its plane of descent. It seemed unlikely that it could be far away.

He had covered perhaps seventy-five feet when the green mist which had obscured his view slowly parted, to reveal a scene which stopped him in his tracks and drove the blood in torrents to his heart.

Twenty feet from where he was standing, on the smooth, metallic soil, was a little group of Earthmen. Fifteen or twenty Earthmen kneeling in a wide circle, with Simel automatic heat-guns in their hands and with the green cloud shining upon them. They were utterly motionless.

Their eyes stared vacantly into space; their features bore expressions of frozen horror. Great splotches of crimson stained their torn and dusty garments. In gaps in the wide circle the heads and shoulders of prone men protruded. Heads without skull caps; shoulders hunched and misshapen, and striated with clotted blood.

As Ross stared horror such as he had never known surged up in him. Horror and sick revulsion. But despite the tremors which shook him he forced himself to move again. Unsteadily he advanced to the edge of the circle of corpses, and examined the scene of carnage at close range.

The bodies of the kneeling men were gruesomely rigid. Above their horror-distorted faces their heads were gruesomely flat. The skull caps had been removed completely and with precision, as though a saw or surgeon's scalpel had aided in the grim disfigurement. Within the brain cavities were neither cerebra nor cerebella. Merely dark striatins, grisly splotches along the base of the periosteum and in the region of the orbital cavities. The brains had been lifted out!

NOT all of the bodies bore wounds. Something more deadly than lethal beams or blast bolts had stricken them as they fought grimly to defend themselves against some ghastly enemy.

Suddenly Ross perceived a little metal object lying on the ground near the rim of the circle. He stooped and picked it up. It was a metal sheet diary, containing about twenty leaves and scrawled in ten-point characters, with a few blockings out here and there. As Ross thumbed the leaves he was filled with a sense of impending disaster, as though he had strayed into a region of ghastly unreality where all the shadows were images of Death.

On one sheet the unknown diarist had written:

I am quite sure that I am the only Earthman who will ever read this record. But if I do not occupy my mind in some way I shall go mad. In a few hours I shall be dead. I shall die resisting, with the curious stubbornness of my kind. When I am dead they will remove my brain, preserve it in one of their queer little jars, and perhaps dissect it in some undreamed of laboratory beyond the Solar System. But they will never know, never really understand how it feels to be a man.

Ross thumbed frantically backward through the record, scanned another sheet. Sentences here and there stood out on the gleaming ten-point script with an ominous clarity.

My contract with the Jupiter Company having expired in 2089 I engaged passage on the trans-Saturnian transport *Iris*. My wife and I had planned a vacation of six Earthmonths in the South Martian Littoral. I intended to debark at Eridanus City; after a stop-over of six Earthmonths at Mare New Cetus.

The alien ship attacked us while we were 0.16 off Saturn's orbit. Diacoustic field blocked out. The luminous web of energy which enveloped our vessel and carried us to Hyperion shows the same frequency in the electrokinetic thermolysis units as the paralyzing beam which they employ as an aid to hypnosis. Their death-beams do not register on our units. . . .

They are creatures of intellect with bodies unutterably loathsome. They are from far beyond the Solar System. They can vaguely understand some of our thoughts, but our emotions are utterly alien to them. *They have no desire to remain alive at all.*

As long as life remains in their hideous frames they seem to experience a kind of negative pleasure in merely living and thinking. But when we attacked them with our hands, maiming and crippling them, they calmly continued the process of destruction, literally stripping their limbs of all substance. They are incapable of malice. They hate us no more than humane men on Earth hate the ants and bees which they thoughtlessly trample under foot. . . .

It is the hypnosis we fear most. We have resolved to die rather than continue to submit to it. By some extraordinary development of the power of telepathy they can read our minds and actually transfer their own thought-images, their own alien ways of willing and thinking to us. When they stare steadily at us for several minutes our brains are narcoticized and enfeebled. We fall into an hypnotic trance and think the tendril giant's thoughts, dream their awful, impersonal dreams. Dreams in which self-preservation plays no part.

Most of my companions have altered appallingly. They have renounced their human heritage, and are no longer capable of revolt. Hopelessly wretched, and lost, I and a few others have struggled to remain human and have succeeded in resisting hypnosis. We intend to flee tonight. They no longer guard us closely. They foolishly believe that we have lost all desire to escape. We shall flee to Blue Ore Valley, where there are no poison spores or deadly leech-weeds. We will camp there, strengthen our defenses. They are taking our lost companions away tonight in their stellar space vessels. But we the dead will lose only our brains. . . .

Ross read no further. Sweat beaded his forehead as his gaze returned to the circle of massacred men, lingered on each in turn. But there was nothing to identify the diary writer. He had found sanguinary oblivion along with his companions. The gruesome fate which he had foreseen had not spared a single member of that heroic band.

CHAPTER IV

The Tendril Giants

A SCREAM tore suddenly out of the mist, echoed appallingly from the black crags on both sides of the valley and reverberated afar. It was a human scream, vibrant with terror, shrill with pain.

Ross turned and faced down the valley, straining his ears to catch whatever sound might come. Presently footsteps echoed through the thin green mist a few yards ahead of him, footsteps that faltered to the pitiable accompaniment of groans and low, gurgling sobs, and then advanced again.

At length the mist divided to reveal a tall, staggering form, nearly naked, who could not stand upright because of the wounds he bore; who could only groan and twist his head in torment as he approached Ross on legs that threatened to collapse beneath him.

Justin Nichols was an object of horror. Corrosive spores had eaten away all but the shoulder straps of his space suit, and from his exposed flesh there hung the long, ribbonlike tails of writhing leech-weeds. The heads of the weeds were buried deep in his flesh.

Ross drew a breath of shuddering horror. A great wave of pity and compassion flooded his being. He had vowed eternal vengeance against this killer of his friend. But it was impossible to feel anything but pity for a wretch so tormented, so cruelly trapped.

Nichols was clutching now at Ross' sleeve. His voice was hoarse with terror.

"Thank God you followed us," he almost sobbed. "Did you see their ship? It came up out of the mist, threw a sort of light—Ross, it's horrible. They're from beyond our universe. Vegetablelike things—"

Nichols swayed suddenly. Ross caught him about the shoulders, steadied him.

"Easy," he cautioned. "Easy, Nichols. We've got to get these leech-weeds off."

"Never mind me, Ross," Nichols groaned. "You can save Marta. You can take her off in your ship. They're totally deaf. That's how I got away. I couldn't wake Marta. They put her to sleep. Put me to sleep too, but I woke up."

His grasp tightened on Ross' sleeve.

"I stumbled into a nest of leech-weeds. God! It was horrible. They attacked me, tore me."

His breath was coming laboriously now.

"I'm dying, Ross. Must finish. Must tell you. Marta is my sister. She thought me—innocent. I lied to her. When I stole—from Mercury Company—I was desperate. Horribly in debt. I thought I could return—platinum—before loss was noticed. When I found I couldn't I had to flee, Ross. She followed because she was loyal. In the terminal—just impulsive. It was your life or mine and I—was her brother. She didn't know I—rayed you in space. She's blameless, Ross."

Suddenly Nichols' tormented eyes bulged glassily. He cried out in terror, jerked his body erect and, twisting free from Ross' supporting arm, plunged with terrified whimperings into the obscuring mist.

Ross was so startled he stood rooted to the soil. A tall, wavering shape had emerged from the mist a few yards away and was moving swiftly along the valley toward him. The creature was eight feet in height and covered with a kind of yellowish fuzz. It looked like an immense, shriveled root. Only its head, which was vaguely anthropomorphic in contour, and its little tubular legs hinted at animal kinship. Its heart-shaped face was a flat, wrinkled expanse, expressionless save for the bright glitter of two little slitted eyes, and a writhing, puckered orifice immediately beneath them which appeared to serve as its mouth.

FROM its twisted, cankerous body there sprouted numerous frail, plantlike tendrils, some green, some red, and a few the pallid, sickly hue of Saturnian corpse fungi. A few

sturdier tendrils, more like tentacles, were wrapped tightly about the upper part of its torso. Both the tendrils and the curiously twisted and unsymmetrical body suggested a vegetable rather than animal origin.

Held tightly in the curling extremity of one very brilliant tendril was a little metallic cone about eight inches in length. As the repulsive creature advanced on its stumpy legs it slowly raised the extremity of the tendril and leveled it in Ross' direction.

Instantly a beam of light flashed from the cone and enveloped the terrified Earthman. The light flashed out so abruptly that Ross' faculties responded with a violent shuddering. All through his body the strange, intense convulsion passed; his muscles, nerves, the very pulse of his blood was affected by it.

Then something seemed to grip him about the shoulders and draw him agonizingly backward. The paralyzing beam jerked his arms sideward and pinioned them at the elbows; then took possession of his legs and stiffened them till he stood rooted to the ground.

He was now incapable of movement. Only his brain remained feverishly active, oppressed by qualms which twisted his features into a quivering mask of horror. Moving constantly closer the abhorrent shape seemed to increase its speed with every foot traversed. When it was appallingly close the little slitted eyes opened suddenly, horribly, in the pear-shaped, wrinkled face and widened to a hideous bigness.

For seconds that seemed to expand into hours and then eternities the bright, saucerlike orbs stared relentlessly into the fright-dilated eyes of the Earthman.

Ross felt his faculties wavering. Light receded from all the objects about him. Their mist-enveloped contours shimmered nebulously; then vanished into darkness. The tendril giant's eyes became tapers of bright flame burning through a curtain of impenetrable gloom. For a time Ross fought frantically against the stupor which was engulfing him. Momentarily he succeeded in beating his way back to the gates of consciousness. Bursts of light stabbed through the gloom; flashes of clarity showed him familiar objects for an instant. But it was a losing struggle.

The hypnotic orbs were glowing more brightly now than the blinding giant suns of outer space. They usurped his world, his universe. Relentlessly as he struggled oblivion clutched at him with iron fingers and dragged him down into the abyss.

CHAPTER V

Captives in Space

WHEN Ross opened his eyes again he was lying on a smooth, cold expanse of gleaming metallic soil. Obscurely amidst the vapors which clogged his sleep-drugged brain a glimmer of light appeared. Slowly it widened and spread. He became aware of dim shapes that moved slowly across his befogged and distorted vision.

Slowly his faculties expanded. He moved his limbs; raised his head and touched the oxygen filter on his face. For an instant he stared upward into the swirling green mist, bewildered. Then memories came rushing back. With a groan he twisted about and rose to his knees.

Instantly a sense of wonder and utter alienage pervaded his being. A few feet away, partly obscured by the luminous mist, eight tendril giants were standing on their little tubular legs, silently watching him. As his gaze penetrated the mist his eyes widened in sudden, joyful recognition. Within his mind human memories and impulses were now intertwined with images vast in scope, and of non-human origin. For the first time he had perceived the compulsion under which the tendril giants labored and did not recoil from them in revulsion.

The tendril giants were endowed with a wisdom far transcending anything of which the human race could

boast. An insatiable, all-consuming *curiosity* was their dominant appetite. This appetite was more pronounced and aggressive than the simple emotional desires of the Earthmen and included a fierce, uncontrollable urge to explore every crevice of the known universe, to fathom every variation of animal and vegetable behavior on every planetary system. It was this urge which had sent them Saturnward across wide gulfs of space, bent on exploration and discovery.

Resting on the gleaming soil by Ross' side was the reclining form of a slim young Earthwoman. Sweat beaded her white forehead, and her copper-colored hair was damp with clinging moisture. She had risen on her elbow and was watching him with a slight, perplexed frown. Suddenly she plucked at his sleeve.

"You are James Ross," she said.

Slowly Ross gazed down at her, nodded. His face showed no surprise.

"And you are Marta Nichols," he said simply. "You are to be my companion in the great journey which lies before us."

Ross' face grew suddenly stern and impassive.

"We have lived lives of folly, Marta," he murmured. "We have squandered our vain human energies blindly, stupidly. How these great beings must despise us! How loathsome we must seem in their sight! Their cold, impersonal intelligences transcend our little lives as we transcend the lives of worms and insects."

Slowly he rose and extended his hand.

"Come, Marta," he said.

The Earthwoman's face was an enigmatic mask. Her pale features were resigned, composed even, but there was a look in her eyes which was vaguely disturbing. No muscle of her face twitched as she slipped her palm between Ross' fingers and followed him over the shining soil to where the tendril giants rested. But her eyes were not the eyes of one who has gazed on cosmic glories and experienced a mental rebirth. Her eyes were womanly, human, with glints of rebellion still in their lustrous depths.

Before the tendril giants Ross and the girl paused, in tremulous awe. Their loathsome appearance did not alter the expression of almost rapturous acceptance on Ross's face. From the group of ten plant-creatures two arose and drew near to Ross and his companion. With soft murmurs that seemed to hold accents of approval and admiration they seized them gently in their tendrils and lifted them from the ground.

The journey which ensued led northward along the valley over a level, moist terrain covered by corpse-white fungus growths and a convoluted, sanguine-hued plant which grew close to the soil and bore a nauseating resemblance to the lobes of a human brain.

The valley widened as they advanced, the soil becoming soggier, and the vegetation more brightly-hued and luxuriant. The tendril giants varied their gait to accommodate themselves to impediments under foot, but no obstacles presented by the changing landscape seemed too difficult to surmount, and Ross and his companion remained safely suspended above the swaying shoulders of their carriers.

DESPITE the changing topography the journey, in its initial stages, was monotonous, but after an interminable series of detours they ascended a nearly vertical escarpment of bleak, forbidding rock and emerged on a flat, mile-wide plateau above a narrow ravine.

An exclamation of joy and wonder burst from Ross' throat at the spectacle which confronted him. The entire plateau was studded with huge, wedge-shaped spacecraft which rested on elevated landing discs, slowly revolving in the mist-light. Between the enormous dark vessels hundreds of tendril giants were moving over the reddish, pitted soil, testing great projecting valves with upraised tendrils. Others were vaporizing the solid masses of potential energy in the gleaming propulsion tubes which enormous lifting cranes were depositing in the basal compartments of the skyward-pointing vehicles.

A little group of six plant-creatures was bearing to a grim ravine-burial at the edge of the plateau a few shapeless things which had been horribly mangled in the abysses between the stars.

"Look, Marta," Ross murmured. "Here are nearly all the space-voyagers, the cold, audacious ones who explore the interstellar gulfs. No Earthman has ever before beheld one of the great projectile bases. Two-thirds of all the spaceships of the star people come to rest here."

Into Marta's blue eyes crept a dim flicker, which suddenly became a steady glow, burning into the eyes of her companion. Then it vanished. With a little sigh she stared upward into the mist, as though a grim presentiment weighed upon her.

Progression on the level plateau, despite its pitted surface, presented fewer difficulties to the tendril giants than the plant-infested lowlands beyond and they progressed with unbelievable rapidity on their tubular legs to the base of one of the landing discs.

Still more quickly the two were lifted to the disc; assisted into the great vessel by the down-reaching tendrils of a plant-creature pilot. With soft murmurs the two carriers withdrew from the revolving disc, lumbered backward over the plateau. The pilot drew Ross and the girl quickly upward, over a shining surface of space-weathered metal that glistened in the mist-glow and down into the interior of the vessel.

Ross offered no resistance. A boundless joy surged through him at the thought of the stupendous gulfs he was about to traverse. But Marta struggled a little as though in resentment as the tendril giant pilot fitted her slim body into a passenger berth that was at the rear of the pilot chamber.

The immense compartment in which they found themselves was filled with a fantastic assortment of charts and mechanisms. Green globes filled with wavering fluids, metallic testing meters with altitudic readings which operated by infra-atomic control, motion-balancing energy-depleters in square boxlike containers. An illuminated control panel studded with little, glittering dials and surmounted by a celestial chart of huge dimensions, in which the constellations were wondrously displayed, usurped the wall-space directly opposite them.

Ross rested beside Marta in the passenger berth. The tendril giant pilot stood before them for an instant, waving its tendrils and swaying its root-like body in the throes of unfathomable emotions. Then it turned and advanced across the chamber to the elevated pilot's seat which abutted on an observation window of such curious molecular construction that its atoms were rearranged constantly as it passed outward into space, enabling it to remain utterly transparent in the alien magnetic fields and inconceivably lowered temperatures of far star-clusters.

THE pilot tendril giant ascended into the elevated seat and curved one of its tendrils about a longitudinal bar projecting from the glowing switchboard beside it. The bar was wrenched violently from its socket, turned about and reinserted in an adjacent connection. Instantly it began to revolve, while green and purple sparks ascended in a blinding, whirling cascade to the roof of the chamber. The bar was a generator of stupendous energies. Composed of magnetically-conditioned molecules it acted as a kind of transformer, releasing stupendous fields of force in the liquid reservoirs of potential energy which reposed in the basal compartments of the great vessel.

There was a thunderous detonation and a blinding spurt of light as trillions of electronvolts ripped the wave packets from the sealed ends of the propulsion tubes, lifted the great ship from the earth, and sent it hurtling outward in the direction of the glimmering constellations.

Ross' eyes were shining. He turned to the girl.

"Do you not see, Marta," he murmured gently, "that we are about to share an immortal adventure? The

star people are testing us, testing our unworthy kind. Hitherto we have been swayed by violent and petty emotions. But now, on some far galaxy, we shall be tested and proved worthy.

"Just what the nature of the test will be, I do not know. But I believe that we shall be given some heroic task to perform. If we do not falter, if we do not allow our petty human emotions to sway and hamper us the starpeople will know that there is still hope for our little race. Still hope for the little, primitive bipeds, Marta!"

"You have absorbed the starpeople's knowledge and speak with an alien tongue," Marta said after a while. "They are great, but they are not as great as we. I, too, have submitted to hypnosis, but though I share their wisdom I am not so easily swayed."

Ross' face hardened. He tore his gaze from her countenance and stared at the glowing observation window which revealed a blanket of shimmering suns beyond the gently swaying body of the tendril giant pilot. He knew that somewhere in the far, outer cosmos, perhaps in some superuniverse of inconceivable dimensions, he would be tested gloriously and rise forever superior to the tormenting limitations of his human heritage.

"Look at me, James Ross," said Marta suddenly.

Ross shivered a little, tried to keep his eyes riveted on the window. But the woman's voice and gaze had forged a double weapon which threatened him with painfully sweet urgency. He turned again, and their eyes met in a swift, visual embrace.

"For only a brief moment, which was darkened by enmity, were we together, James Ross, in our dear human world. But somehow I—James Ross, I speak now to save you. The reticence which becomes my sex I must thrust aside. When first my eyes looked into yours, James Ross, I loved you."

Ross' lips were mute, but a thrill of wonder went through him. It was as if her voice had penetrated to some secret, inner recess of his being, jarring faculties which slumbered, restoring him to a world of loveliness which was alien to the tendril giants' nature.

"I know that everything that is human seems distant now and pitiful," she murmured. "But once it was not so. A hideous spell has been laid upon us, so that a mist films the bright face of that other glory. But through the mist I can see it dimly, and I know that the star-testings you speak of shrivel into insignificance beside it. Look at me, James Ross. Look steadily into my eyes. Perhaps we can recapture it before it is too late."

ROSS complied. For interminable minutes he gazed deeply into her eyes, until their soft radiance filled his world, his universe, until the tendril giants were forgotten and the glory which Marta saw appeared to him in mistless splendor, and he recognized it as the miracle of love.

Suddenly his shoulders tensed and a grim expression came into his face. Swiftly he descended from the passenger berth and moved across the chamber. The tendril giant was bent above the controls, oblivious to his approach. Ross crept up behind it in utter silence. Slowly, cautiously, his arms went out.

Marta screamed as the Patrol officer tore the writhing creature from its high metal seat, and hurled it with violence to the floor. The next instant Ross was down on the floor beside it, clawing and tearing at its writhing bulk.

The tendril giant looped its appendages about the Earthman's limbs and tightened them into knots which sank cruelly into his flesh. Marta screamed again. Bright human blood appeared in a swelling rim about the tightening vegetal coils; spurted over the rootlike creature's repulsive, slowly twisting back.

Ross continued to claw frantically at the torso of the prostrate monster. His fingers tore at pulpy flesh; his nails sank deeply into the thing's soft vitals. He saw the wavering ceiling of the chamber through a pinkish mist which slowly deepened to the hue of

blood. Excruciating stabs of pain cut through his chest and snaked agonizingly down his limbs. He was choking for breath, gasping in an extremity of torment when the pressure slowly relaxed.

The tendril giant untwined its coiling appendages and writhed away from the Earthman's clasp. The next instant an almost unbelievable thing occurred. The odious creature turned over on its back and began frantically to tear its own flesh. Having suffered injury in some vital region it was proceeding with a frenzied eagerness to escape from the burden of personal existence.

It was all so strange and horrible that Marta sickened as she watched it. Its tendrils went out and ripped all the soft, spongy tissue from its own body. The hideous process of self-destruction continued until there was nothing left of the monster but a fleshless endoskeleton covered with a dark muculent ichor which glimmered offensively in the strange, dim light, of unknown origin, which illumined the interior of the chamber.

Ross got unsteadily to his feet and stared in shivering horror at the prone, repulsively gleaming form. All about it lay pulpy fragments of its own torn and quivering flesh. For several minutes it continued to writhe and move blindly about. Then a convulsive tremor passed over it. It lay still.

Ross' lips were white. The muscles of his face twitched a little. When he withdrew his eyes from the horror on the floor he stood a moment without movement, staring at Marta who was crouching in an attitude of shuddering incredulity at the edge of the passenger berth.

Suddenly he passed a tremulous hand across his brow.

"Marta I—I believe I can pilot this vessel. I remember how the controls work. They explained the mechanism to me when they put me to sleep. It's so simple a child could master it."

He was still trembling a little.

"They thought *that* might destroy itself," he said, nodding toward the denuded horror on the floor. "It often happens. Sometimes they're seized with sudden, suicidal impulses for no reason at all. They thought if it did happen I'd pilot the vessel back to Hyperion. That's why they explained the mechanism."

Suddenly his eyes lit up. His voice grew tense, exultant.

"They were blindly stupid! Do you know what I'm going to do, Marta, my darling? I'm going to reverse our course and fly back to Saturn. Through the airlocks, Marta! Into the skyport!"

Abruptly he turned, limped across the chamber and raised himself with an effort into the high pilot's chair.

Marta sat as though stunned, silently watching him, hardly daring to breathe. Then a womanly impulse asserted itself. Descending from the passenger berth she crossed to his side and sank to her knees at the base of the pilot's chair. Her copper-colored hair enveloped a wide expanse of gleaming metal as she laid her cheek against his knee.

"Whatever happens to us, my dear," she murmured, "we will be together until the end. Either on Earth, or—"

Her voice trailed off as the great interstellar craft responded to the guiding hand of its Earthborn pilot. She sat without speaking, gazed tenderly up into Ross' grimly exultant face, so wrapped up in him that, womanlike, she forgot the perils ahead and thought only of the miraculous present.

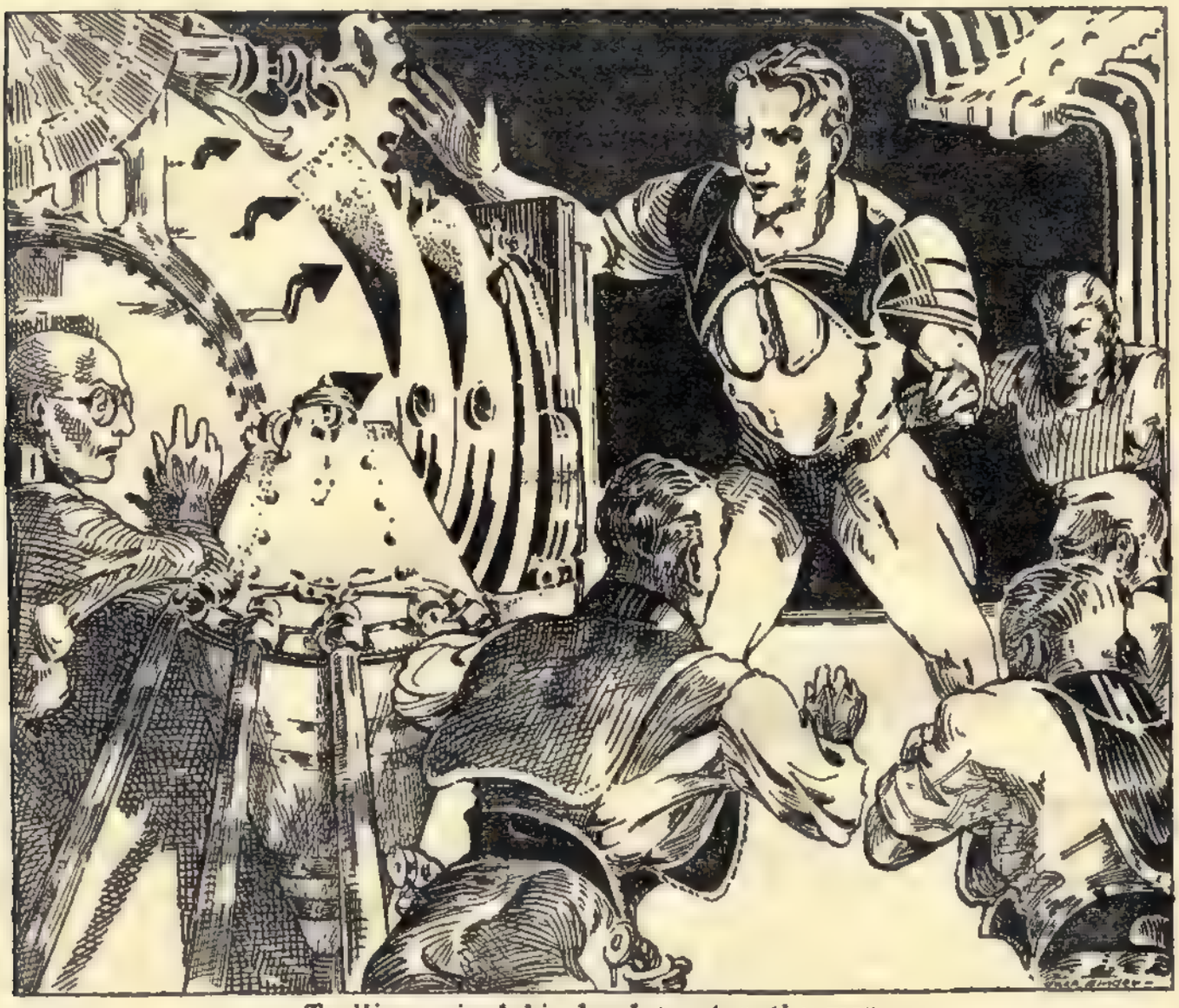
IN THE NEXT ISSUE

FLIGHT OF THE SILVER EAGLE

A Novelette of Scientific Warfare

By ARTHUR LEO ZAGAT

THE SEEING EAR



Trelling raised his hand to stop the man

Mark Trelling Finds That Short-Waves Can Talk Plenty When a Band of Scientific Criminals Cross Their Television Signals!

By JOHN SCOTT CAMPBELL

Author of "Beyond Pluto," "Pillsbury's Nickel," etc.

MARK TRELLING, president of American Television, took it quite calmly when the four men stepped into his autogyro at the 40th level stop and ordered him, at the points of their cyanite pistols, to lie upon the floor. One of the intruders slid into the vacated driver's seat while the others crowded over him in the tiny cabin and proceeded to bind him in sheets of gummed acetite. When he was thoroughly tied he was placed upon one of the rear seats. Only then did his captors speak.

"Trelling," said one, a youngish bald fellow in a blue rayon business suit, "this is a kidnaping."

"I know it," snapped the bound man. "What I want to know is, what is the idea? I hope you're not such a fool as to expect ransom."

"No," replied the other. "No one's collected ransom since the Hammerly

case in 2080. That's not what we want."

"Well, since you're so well posted, I don't need to tell you that kidnapers are executed."

"If they are caught," added the other, composedly. "But they're not caught where we're taking you."

"And that is—"

"Ever hear of Kerguelen Island? It's a little rock in the South Indian Ocean. Deserted since 1990, a thousand miles from an air line. We have a cave there that can be entered only by going through forty feet of water at low tide. Your autogyro will be abandoned in a few minutes when we change to our own stratoship. In ten hours we shall cover the ten thousand miles to Kerguelen, the stratoship will be hidden under water, and there won't be so much as a pebble stirred to tell where you are."

The president of American Television moved slightly to rest himself.

"Very ingenious," he commented at length, "but rather expensive. What do you get out of it?"

"I was coming to that. Your company has in its possession certain information that we want."

Pausing, the speaker noted his prisoner's mouth set in a thin determined line.

"To be precise, we want to know the composition and method of manufacture of the color sensitive material used in your new transmitting tube. As soon as you tell us that and give a demonstration of manufacture you are free."

Trelling shrugged his shoulders.

"Then you can take care of me for the rest of my life," he said. "I have only the vaguest idea of its composition and I don't know how it is made. I am president of the Company—not chief technician."

The other smiled slightly.

"No use, Trelling. We know all about you. We know that you used to be an expert operator and worked on the new dyes with Barger, the inventor."

"But, I still don't know the exact proportions," Trelling protested.

"We've got that all fixed. We have a teleradio, its relay connected so the location can't be traced, for you to get any dope you need direct from Barger."

Trelling was silent for a moment.

"All right, I'll tell you how they're made, but I can't make any outside of the Company laboratory. The process requires special apparatus and very exact control at every step."

"You can stow the sales line," suggested the bald man briefly. "We have a lab on the Island that your chief technician wouldn't mind working in."

AT this moment the pilot pointed upward and cried out, "We're under the Cirrus—" The autogyro whipped abruptly upward, the air screaming about its rotors. Trelling had a brief glimpse of a dark hovering shape overhead and then, with a jolt, the smaller craft hooked itself onto the stratoship and dangled, swinging slightly.

"All out," said the bald man shortly. "Reid and Lindroth, carry him."

Mark Trelling was deposited in a tiny windowless cabin in the stratoship, untied and left alone, all without a word being said. During the brief trip through the main cabin, he had observed that he was on a medium-sized craft of an older type—model 2110, probably—with a hundred meter wing spread. Hardly any crew seemed in evidence; the four who had brought him and the half dozen in the control cabin seemed to make up the entire company.

Trelling sat for some minutes on the narrow bunk and rubbed the places where he had been tied. A gentle force directed toward the rear indicated that the stratoship was accelerating, but no sound came through the heavily insulated wall.

After he had reduced the ache in his wrists and ankles, Trelling commenced a methodical examination of the cubicle. It measured hardly two by three yards, and he could easily touch the duralumin plates of the ceiling. Save for the door, the only opening in the walls was a three-inch ventilator near the ceiling, which was

covered with screen. Standing upon the bunk Trelling peered into this and then listened carefully. No spark of light was visible, but a faint humming and scratching sound came through.

It was hardly a noise to attract attention, even in the 22nd Century, but for Mark Trelling it seemed to be of the utmost interest, for he pressed his ear flat against the opening and shut his eyes. After several minutes he descended to the floor, an expression of great excitement on his face. He murmured several words to himself.

"Dahl—it can only be Dahl—he must be in a desperate corner to do this. Well, another hour will tell."

Before that time had passed one of the crew brought a dish of food. Trelling took it without speaking and ate slowly and with apparent pleasure. In a few minutes the man returned for the dish and Trelling was left alone for the night. As soon as he was sure of this, the television president did a strange thing. He switched off the room light, placed the aluminum chair on the bunk and sat down, his ear pressed firmly against the air duct.

The sound was still there, a curious fluttering and scratching, with occasional abrupt buzzes and pops, against a background of steady high-pitched whistling. Trelling listened attentively, nodding his head now and then. After the passage of a half hour, he carefully replaced the chair and crawled into the bunk as calmly as though he were aboard his private stratoship on a vacation cruise.

Trelling awakened some time before the expiration of the ten hours. The room was still dark, the floor quivered slightly, indicating that the ship was still in motion. He lay quietly for a moment, and then listened at the ventilator. After an interval he chuckled briefly, and then his face became grim.

A half hour later the bald-headed man and two others entered. They found Trelling lying on the bunk, apparently asleep. The bald man shook him into wakefulness.

"All out. We are here."

"Where?"

"Kerguelen Island. Now, you'll have to stand being tied again, and also blindfolded, because we don't want you to see how we get in and out of this place."

Trelling submitted quite calmly, making no answer to this and other bits of voluntary information. When he was satisfactorily bound, the two crew members picked him up and carried him through the control cabin, down an incline about which water could be heard gurgling and into a small room where he was placed on a bench.

"Submarine," volunteered the voice of the bald man. "We're forty feet below the surface and just entering the tunnel."

A FAINT mechanical hum shook the bench slightly and a liquid rushing was audible about them. Trelling said nothing. After about ten minutes the vibration ceased and a light rocking motion took its place.

"We are on the surface," announced the bald man. "Open the hatch."

Trelling listened attentively to the sound of turning bolts and the sudden intensifying of the faint noise of lapping waves. A cold, damp draft blew in on his face, bearing the odor of sea water and kelp. The men picked him up once more, carried him across the rolling deck and onto solid footing.

"Concrete key," said the bald man. "Built right out of sixty feet of water."

For a score of paces their footsteps echoed as though they were passing through a wide cavern, and then the walls and ceilings of a tunnel closed about, muffling all sounds. Several doors were opened and closed, a half dozen turns were made, and then, at an order from the bald-headed man, blindfold and bonds were stripped off.

Trelling found himself in a small, concrete-lined room in which were a dozen men and a radio television set. It was, he noted with ironic recognition, a product of his own Company. As they entered the room, the bald man spoke to him.

"We've got Barger waiting at the plant for your call. Get the dope and you'll be back home in fifteen hours."

Trelling nodded and stepped before the transmitter. In an instant the white screen flashed brightly and George Barger stood before him in the office, an expression of anxiety on his face.

"Mark," he cried, "in heaven's name what's happened? Where are—"

Trelling raised his hand to stop the other. He said nothing for a moment, and then drew a deep breath. Finally he replied.

"I'm in the office of Dahl Television, Dahl Building, New York. Surround the building—"

The screen before him went blank, a dozen hands seized him, but the damage was done. For an instant it appeared that he would receive bodily harm, and then an authoritative voice called out and a thick-set, spectacled man came from behind the screen. He rubbed his hands together and made a weak attempt to smile.

"The game's up," said Trelling crisply. "Now, Dahl, talk and talk fast. The aerial police are landing by now. This was a pretty raw trick and you're going to pay."

Three minutes later, as the first of the aerial police entered the room, Trelling slipped a seven figure draft into his pocket. Dahl sank into a chair. In another moment Barger and a score from the American Television burst into the room. Trelling, now as calm as though he were at a Board meeting, took the police captain aside.

When the aerial police had departed, Trelling turned to Dahl and the bald-headed man.

"Since you were so kind as to give me a conducted tour through your 'subterranean caverns,'" he said briskly, "I'll reciprocate by showing you where your scheme slipped up." His glance flicked over the abject group before him. "There were several minor errors, such as record scratch in the bubbling and wave noises, and distortion in the electrical echo machine, but I knew the whole trick before I'd even left the ship."

DAHL stared at him in stupefaction.

"You did a good job, frightening me with fear of life-long imprisonment at the ends of the earth, and putting me in a windowless cabin so I couldn't see where I was taken, but there was one loophole—or rather a ventilator hole. I couldn't see through it, but I could hear. I heard the hum coming from the audio transformers of the infra-red television navigator that transmitted the route to the pilot."

Seeing the blank expressions on the faces before him, Trelling explained.

"Dahl, there're some advantages in being trained as a television operator. I checked images for fifteen years before I became president, and in that time I learned a lot that no business man ever knows. All those years while I watched images, I also listened, involuntarily, to the *sound* of the television signals—the hisses and clicks and bumps that correspond to light and dark shades in the picture. You scarcely notice them even around a high-powered set, unless you know for what to listen. But once you hear them, they're unmistakable. And after you've heard them often enough you commence to be able to understand the picture they represent without seeing the screen. After all, the details are all there—it's merely a matter of correct interpretation—developing of a sixth sense, if you wish, that of seeing through the ears.

"Naturally, when I heard the sound of television coming through the ventilator from the navigation room, I watched with my ears. I soon saw—or heard—that we were not heading southwest toward the Indian Ocean, but were circling about a few hundred miles from New York. The rest was simple. The ship hovered above the Dahl Building for a half hour before settling—the letters *Dahl Television* were clearly audible on the roof, and I could almost hear the features of Dahl himself looking up at us."

Trelling paused and glanced about the room.

"Racketeering," he said virtuously, "doesn't pay in the year 2136."

THE ICE ENTITY

Deep in the Frozen Arctic Wastes, One Man and a Girl Strive to Solve the Secret of a Strange Sentient Life That Would Blot Out the Sun!

By JACK WILLIAMSON

Author of "Islands of the Sun," "Legion of Space," etc.

CHAPTER I

Fingers of the Ice

BLAKE had tried to dissuade Jean Adare from undertaking the fatal journey.

"Better stay here with me, Jean," he had advised. "Here, there's a chance. Out there, on the ice, you won't live an hour."

Blake saw the green ropes of fire

"Non," muttered the little 'breed. "I go! I know we die here. Ze wood almos' gone. We freeze, or worse—" His trembling hand seized Blake's arm. "You come wit' me, *mon vieux?*"

"No, Jean. I've got work to do." Blake's big hand had gestured at the crude bench across the end of the cabin, where the white radiance of an electric bulb fell on his delicate and tiny instruments. "If I get it done we can live without a fire."

"Mon Dieu! Ze ice has made you crazy. *Au revoir.* I go, before it is too late—"

"Wait," Blake protested. "Listen, man. You'll be killed—"

Later, rubbing the thick frost from a tiny window, Blake watched Jean Adare try to fight his way south across the shining horror of the glacier, toward the Chandalar-Yukon trail. Watched him—die.

Fear had preyed upon them all the dreadful winter; and for three weeks terror had lived with them in the cabin.

The tiny building stood on ground almost level, a hundred yards above the glacier that had come down the valley of the Mannabec. The arctic barrens, southward and east, spread shining desolation. Northward the plateau lifted into ice-armored hills, cleft with the glacier gorge of the Mannabec.

Mason Blake was a big man. His wide-shouldered body was bulky with furs. His red hair was unkempt, shaggy; his blue eyes, hard with little glints of steel, shone above the winter's growth of curly red beard. His great hands, bare to the chill in the room, trembled as they handled delicate metal objects.

He strove to find forgetfulness in the details of this task that had so

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A Complete Novelette of Polar Catastrophe

Living serpents of green flame coiled about the wings and fuselage

many years absorbed him. But the horror that had driven Jean Adare out to die still lurked in the silent room.

Blake thus far had resisted the madness that drove the 'breed to death. Yet he understood it, because it had claimed one corner of his brain. He felt nothing but sympathy for the fugitive.

In the brief summers, while they worked the rich placer deposit that was now buried under the glacier, Jean Adare had ever been a generous and gay companion. But the dark chord of fear in his primitive heart always responded to winter's bitter threat.

Always, he had been annoyed by Blake's experiments. And, at the last, when he had been terrified, he had found Blake's absorbed serenity intolerable.

"Que diable!" he had burst out once, angrily. "Speak to me! I cannot endure ze damn silence. Say zat you are cold. Say you fear ze ice. I t'ink you drive me crazy!"

"You never understand, Jean, what I'm doing—"

"Non, but I do understan'. I understan' zat you are beeg fool, yes. You try to destroy gold—"

"I can destroy gold," Blake corrected him cheerfully. "You saw the activated particles under the microcope, like golden stars burning. What I'm working on is a way to control the process—and I think the tau-ray will do it.

"What you don't understand is that energy is worth more than gold. One tiny grain would give us light and heat for all the winter. One little flake would drive a steamboat up the Yukon from the Aphoon pass to the Chandalar."

But Adare refused to catch Blake's enthusiasm. He went back to crouch miserably over the stove, his one dark eye staring solemnly at the dwindling pile of wood. The stringy, stained wisp of his beard moved monotonously as he chewed; ever and again the stove hissed as he spat upon it.

The whole winter had been a burden. But the two before had passed without tragedy. It was the bewildering, the inexplicable, the mind-crushing events of the last three weeks that had driven the 'breed upon his fatal flight.

Blake knew, he thought, more than any other man of this incredible nightmare that had seized all the world. Yet his scientific mind searched in vain for its origins.

The winter had been the coldest of history—here and throughout the northern hemisphere. The radio had brought reports of unprecedented blizzards sweeping all America. The unparalleled displays of the aurora had spread wings of terrifying flame visible almost to the equator—the result, Blake knew, of a period of extreme sunspot activity.

The cold, the aurora—all the world knew of them. But Blake and Adare had been the first to observe stranger things. They had seen a green and living light spread through the ice, an uncanny, pulsating glow that seemed independent of the auroral fires. They had seen the glaciers break and move, despite the cold, as if they flowed to the pressure of an inner purpose.

BEWILDERED, Blake had paused in his researches long enough to assemble a little short-wave transmitter, powered from the small gasoline motor-generator under the bench. For a month he had reported daily to the world all he could observe of the strange fire and motion of the ice.

His last message had carried his observations of a stranger thing: the motionless, unchanging cloud that loomed black and sharp-edged against the aurora, above the shining northward hills.

The interference of terrific electric storms had been making radio communication almost impossible, and that day Jean Adare had been abruptly seized with the obsession that this electrical interference was a deliberate attempt of the ice to cut off the reports.

"Stop it!" he screamed as Blake sat before his microphone, patiently repeating his message against the roaring flood of static. "You tell ze secrets

of ze ice. It is angry! It will kill us, unless you stop! *Que diable—*"

"Kill us? How?"

"Ze damn glacier! It creeps up ze slope. Ze green fire is in it. *Grand Dieu!* It comes to crush us—"

Rubbing away the frost to peer through the window, Blake had seen that the green and shining wall of ice, that had come down out of the hills to fill the valley of the Mannabec, was indeed nearer than it should have been.

A crash brought his eyes back into the room. He saw that the desperate 'breed had smashed his microphone. Strangely, the interference had immediately lessened somewhat, so that he was able to pick up reports of the extreme cold, of loss of life—and to hear the frantic appeals of scientists for his observations.

But the greatest puzzle, the most terrific catastrophe, was what had happened to the sun. That had been two weeks later, now three weeks ago.

Jean Adare had been waiting with almost pathetic eagerness for the sun. He had marked the passing days upon a tattered calendar, prayed for the dawn of spring.

At last came a time when the aurora flamed in a clear sky, and the bitter air was still. Jean Adare slipped into his furs and went outside the hut. Blake, a moment later, heard his eager shout:

"*Le bon Dieu!* The sun—"

Dropping his tools, he ran outside—just in time to meet Jean's exclamation of frightened wonder.

Jean was standing on the point of rock above the cabin, peering south across the weirdly shining glacier and the barrens. For three hours it had been dull daylight. A glow of rose had come into the southern sky, the dawn of the summer-long arctic day. And now Blake saw the sun, a disc of red gold, raggedly bitten off by distant peaks.

Even as Adare's cry of fear rang upon his ears the sun dulled, went out. The flush of dawn faded into strange gloom. The sky had become a changeless dome of dusky, frozen violet.

Upon the dark, rocky point the 'breed had turned to stare into the north. Barrens and mountain shone alike with terrible, ghostly green. Above the ice, like eldritch phantoms marching, were glittering shapes of green.

The black cloud that had hung beyond the hills was gone.

"See!" screamed the 'breed. "Ze ice—it grows fingers! Fingers of green fire. Zey put out ze sun. Now zey reach to strangle us! Ze fingers—fingers of ze ice—"

Babbling with terror, he sprang from the rock and started running south. Blake had caught him before he reached the glacier, brought him back to the cabin. But the next three weeks had been too much for him. The violet sky never changed. The cold grew steadily more intense. And the horror at last drove the 'breed to draw his knife, make Blake let him go.

"I'll see you," Blake called as they parted, "when the spring comes."

Jean Adare said grimly, "Spring, she nevair come!"

He cracked his whip and shouted to the shivering huskies. Blake closed the door regretfully, and watched through the frost on the window. The 'breed drove the cringing, unwilling malamutes straight south, toward the ragged green waste of the glacier whose slow, inexorable advance on the cabin had so terrified him.

Blake watched green fire flowing in the ice, pulsating like luminous blood. Numbed with horror, Blake saw insidious green fingers clutching at the man, the huskies.

He saw them dragged down. He shut his eyes and turned away when he knew that the ice had conquered.

Grimly, hands stiff with cold, brain paralyzed with the impact of alien menace, he drove himself back to his task.

CHAPTER II

Fire of the Golden Atom

MASON BLAKE once had felt himself the happiest man in the world.

It was now four years ago since, taking an advanced degree in technology, he had published his thesis, *Theory of Atomic Activation.* It had won him the recognition that turned a wild dream into glorious possibility. His father had made him vice-president of the struggling little Blake-Maddon Electric Company, promised him laboratory and funds for his atomic research. Jane Maddon, tall, grey-eyed daughter of his father's deceased partner, promised to marry him.

But Ellet Frey read the thesis and sent for Blake. Blake didn't go—his father's little firm had been crippled, more than once, by the ruthless activities of Frey's colossal Planet Power Corporation; Blake shared a proud resentment.

Frey came at last to Blake's laboratory. A gaunt, gigantic man, with bright, cold eyes.

"You've got something I want, Blake. Atomic power. I'll give you a contract at two hundred thousand a year, for five years, to work it out for Planet."

"It's worth nothing, now," Blake told him. "It isn't even a toy—because to play with it is too dangerous. If I do get it worked out it will be worth a million times your offer."

The power king smiled.

"I'm glad to see your confidence. My offer is doubled."

"I've nothing to sell," Blake said, flatly.

"Won't sell, eh?" Frey's eyes glittered frostily. "I get what I want, Blake. I'll take it."

Blake had smiled his defiance, until incredible disaster struck.

His father, trying to make the little firm safe from Frey's operations, had contracted for large stocks of copper, had borrowed funds to fit up Blake's expensive laboratories. Learning of the situation, Frey dumped huge amounts of copper on the market and used his vast influence to force the unwilling creditors to call their loans.

When Frey's newspapers managed to color the ensuing bankruptcy with criminal charges, Blake's father shot himself in despair.

Frey, taking possession of the firm's assets, seized Blake's laboratory. But no practical application of Blake's theories had been completed; and Frey's engineers, recalling a casual observation of Blake's, that gold activated by his process would be roughly 829,440,000 times more active than pure radium, cannily refused to make any attempt to carry on the work.

Chagrined, Frey then charged that Blake had stolen records and apparatus from the laboratory. He demanded that Blake perfect and hand over a workable process of gold-disruption.

Despairing of establishing his innocence in the courts, Blake had fled to escape arrest. In happier summers, when he vacationed with his father in Alaska, Jean Adare had been their guide. Blake had grub-staked the half-breed, and a scrawled letter now brought him word of Adare's rich strike on the Mannabec.

Thus it came about that Mason Blake had spent three years in the arctic, digging gold through the summer, toiling through the long winter to perfect a process for the controlled disintegration of its atoms. Success meant power to clear his dead father's name, meant freedom to return to the world—to Jane Maddon.

He had kept in touch with Jane. Left penniless by the disaster, she had found employment as assistant to Dr. Mark Lingard, a distinguished scientist and electrical engineer, for whom the old firm had manufactured experimental equipment. He knew that she was waiting.

Blake turned back to his bench, after he had watched Jean Adare die on the glacier.

He rested his numb fingers on a switch. His blue eyes rested on a golden fleck, almost invisible, lying on the insulated stage before the concave anode of his tau-ray tube. Had he failed again?

Radium, disintegrating, uses up half its bulk in some sixteen centuries. Gold, activated by Blake's discovery, was half gone in fifty-nine seconds. What he sought was a way to control the terrific force he had

liberated; for such power, unharnessed, was a monster set free.

If he had failed again, the quartz stage would be fused and shattered with resistless atomic flame.

HE covered his eyes with his big hand, closed the switch. No fire seared him, and he looked. The metal flake was burning on the disc of quartz like a golden star. With trembling fingers, he varied the intensity of the tau-rays. The star obediently waxed and waned.

Blake sighed with a deep, weary gratitude, and held his stiff fingers in the radiant warmth of the star.

"Done!" he whispered. "Gold has been master of man, through all history—and made him into things like Frey. Now man is the master of gold." His tired eyes closed. "Done—if it had been three years ago—"

The golden light still flooded the room as he pried a board from the bunk, and split it up to make a fire. He made tea for himself, ate, slept. The fire was dead again when he woke. But the gold star still burned; its rays had warmed the room a little.

He sat up on the bunk, and stared at it, with a new light in his blue eyes.

"The world is freezing," he whispered. "Somehow—freezing. But if men had portable heat, portable light—"

He made another fire, and went back to the bench. Chairs and rough table went into the stove as he worked. The wood from the bunks. But the fire went out before he had finished, and silent freezing death came back into the cabin.

But the thing at last was done: a little cylinder two inches thick, a foot long. It held the tiny mechanism of the activator, the delicate little tau-ray tube with its minute coils and condensers. And half a pound of gold.

He twisted at a little stud, and a warm golden light shone out of the tube. It drove the darkness from the cabin, thawed the rime of frost that had crept through the walls. He fed the shivering, whimpering dogs again; then, cold and exhausted, he lay down in the golden beam.

Sleep presently pressed upon him, ridden with nightmares of the green fingers of the ice.

CHAPTER III

The Life of the Ice

THE throb of a motor broke that last nightmare. Numb with the cold that had crept into his body, despite the golden warmth of the ray, Blake ran eagerly out into the frigid violet dusk. Green fire flowed and danced in the wild glacier that filled the valley of the Mannabec. Above it, he saw the plane, a dark fleck drifting in the sky.

Trembling with the breathless hope of contact with man, he held the disrupter like a flashlight, swept its beam back and forth. A white flare answered from the plane. Soon it dropped toward him in a long glide.

There was landing space, he thought, on the snow-covered plateau behind the cabin. He clambered hastily upon a point of rock, poured the golden flood across it. The plane sank low over the glacier. Then:

"Look out! For God's sake!" The scream burst uselessly from his lips. "The fingers of the ice."

The pilot seemed to sense his danger. The plane shot upward. Blake's muscles tensed as he watched the battle. He trembled to the roar of the motors that fought to save the ship.

Green ropes of fire had flowed up from the ice. Serpents of green flame coiled about wings and fuselage, tensed straight, pulled the machine to relentless destruction. Blake's breath went out in a long gasp of silent pain as he saw the ship strike, crumple as it flopped grotesquely over, saw the first lurid streamer of yellow flame lick upward from the wreck.

He saw the quick motion of a little figure near it, a survivor. Remembering the fate of Jean Adare, he thought he would be too late to help anyone. But with the disrupter, perhaps there was a chance.

He plunged down from the rocky

point, hitched the dogs to the sled, and raced toward the flaming wreck.

Under a sky of chill violet, the glacier burned with unearthly living green. He was amazed again at its nearness to the cabin. Its motion was too slow to see. But in a few more days—

He mounted the ragged edge of the glacier. The green throbbed and flowed beneath him, like blood of cold fire.

The point of granite that marked the cabin became a small dot behind him. The plane, now, was close ahead. It lay across a ragged fissure, the broken landing gear pointing into the amazing sky. One wing was twisted and splintered.

Like a golden blade, the flame was thrusting ever higher. Was he too late?

Something gripped his fur-booted ankle. He sprawled on the ice, but his fingers clung to the sled, and the racing huskies, with a tug that wrenched his big body, jerked him free.

Running on, he looked back at the green writhing tentacles. Sick, incredulous fear mounted higher in him.

Fingers of the ice! Half insane, Jean Adare had screamed of them. Blake had seen them drag the 'breed down to death. He had watched them wreck the plane. Now they were clutching at his own body, at the dogs. The huskies leaped from them, yelping with pain.

Blake was so near he could hear the crackling flames, when he was caught again. The sled jerked onward, his numbed fingers slipped. He fell against the ice, and found an astounding, half-invisible net about him. Desperately he fought the chilling, strangling meshes.

The dogs were snarled in the harness, fighting the bands of terrible, living light—and one another. One had his fangs in the other's throat, and both were being crushed in the green coils.

Above their yelps, Blake heard the increasing roar of the conflagration. In the motionless air the flame was rising swiftly, fanned with its own draught. The orange light of burning gasoline flickered over the ice.

Abruptly he was free. The green tentacles seemed to recoil from the flame. The ice beneath him was now black.

He stumbled on toward the plane. The fuselage was a roaring furnace. No human being could be alive within it. But he had seen a figure moving, outside—

"Help! Here—"

The faint voice drifted out of a crevice in the ice. He stumbled, came upon two human figures beside a tapered cylinder of shining steel. One was limp, unconscious; in spite of the bulky flying togs, he could see that it was a girl.

"Here!" the man called again, nervous, urgent. "Help me get her away. Bombs in the plane!"

HIS voice was a husky gasp of pain. His small head was bare; one side was a bloody smear. His right arm flapped limply against his body.

Beside him, Blake bent over the girl. The first glimpse of her white face set a confusion of surprised delight and agony to roaring in his head.

"Jane!" he whispered. "Jane, how did you—"

The little tanned man, with his good hand, was unscrewing something from the end of the steel cylinder.

"Carry her away," he rapped, hoarsely. "Think I can make it by myself, with this detonator. But hurry! The bombs—"

Blake ran with the girl back to the sled. Although the green fire of the ice had retreated, the huskies were still rolling in deadly battle. With Jane here, the plane wrecked, they might mean life itself. He cuffed them, stopped their wolfish struggle.

He was untangling the harness when the little brown man came reeling up, his left hand grasping the little brass cylinder of the detonator from the bomb.

"Had to save it," he gasped. "You'll need the bomb." He thrust it at Blake. "Go on!" he urged. "Leave me. Miss Maddon will tell you what to do. Hurry! Sigma-bombs in the plane.

Equal a hundred tons of nitro—"

Blake seized him, tumbled him on the sled beside the girl. His whip cracked.

"Mush, fellows!"

The flaming wreck was a mile behind when sudden radiance shone blue upon the glacier, and the little man gasped through white lips, "Down!"

Blake steered the sled into a crevasse, dived after it. The ice jolted to a shattering concussion, followed by an air wave that flattened them like a crushing hand. Ice-pinnacles tumbled down about them.

When Blake lifted his ringing head, the glacier was black. The green fire was gone.

"Come on," he said. "If we can make it to the cabin—"

Then he saw that the little man's lips were moving, realized that he was deaf. The little man pulled himself and the inert body of the girl off the sled, held up the brass detonator, pointed back across the glacier. Blake bent in the roaring silence, faintly heard the screamed words:

"Get the bomb—while the ice is dead."

He drove the frightened huskies back toward the crater where the wreck had been. He found the shining cylinder of the sigma-bomb beyond it, half covered with shattered ice. He lifted it onto the sled, started back.

Endless serpents of green fire were creeping beneath him in the dark ice, when he got back to the little man and Jane. He put her back on the sled, beside the bomb.

Green snakes were darting at them, above the surface of the ice, before they came to the edge of the glacier. But Blake had learned a lesson. He twisted a stud on the side of his cylinder, and its golden beam grew more intense.

"An atomic ray," he shouted at the other man. "Light seems to kill the ice. I've stopped it up to ten kilowatts."

The yellow flood drove back the creeping tongues of green. They came safely off the glacier. Blake helped the man and the girl into the cabin, propped the cylinder in a corner, so that its warming golden ray fell across the room.

When Blake had examined Jane's bruises, set the little man's arm and bandaged his head, they talked.

"I'm Mark Lingard."

"I see," said Blake. "I knew that Jane had been with you."

Lingard smiled through his bandages at the quietly breathing girl.

"A splendid assistant, Miss Maddon," he said. "Fine scientific mind. It was her intuition that suggested my investigation—"

"Tell me," interrupted Blake. "Do you know what has happened? The ice?"

Awkwardly, with his left hand, Lingard fumbled for his pipe. Blake filled and lighted it for him.

"Life has been born in the ice." His voice was deliberate, low. "I say life—that's the only word I know to use. Certainly it is something very different from animal life, and even that is a little difficult to define.

"ANYHOW, it is pretty obvious that the ice has something that we must call mind; and mind seems to me the essence and the measure of life. Just what gave birth to it, I can't say. But I believe that it is the establishment of a relationship between the ice crystals, analogous to that between the neurone cells in the brain.

"Probably a matter of electrodynamic potentials. The origin of it I conceive to be associated with the winter's phenomenal displays of the aurora: the impact of electronic and electromagnetic influences from the sun.

"How its energy is derived again I cannot say with certainty. Probably, however, by the diversion of heat into other energy forms. That accounts for the increasing cold.

"The fact remains that it displays energy: by luminescence, by the extraordinary motion of the ice, by manipulation of objects and forces outside the ice. And the release of that energy, again, is patently directed by intelligent purpose. Such

discrimination in energy-release is the very fundamental of life."

He was fingering the sling that held his useless arm.

"Its purpose," he said, "is evidently directed toward the annihilation of mankind. Its intelligence promises to be sufficient to accomplish it."

"You mean—the sun?"

Lingard's brown, bandaged head nodded soberly.

"Was that a blow at mankind?" Blake asked.

"I think so—an incidental one. The ice is intelligent enough to know fear, and it has showed that it fears man—even by wrecking our plane. But the sun itself, of course, was a greater menace than man."

"Of course. It would have melted the ice."

"The danger was more immediate than the melting of the ice," said Lingard. "The sentience of the ice is a matter of delicately balanced electromagnetic potential differences. The sun gave it birth, with the strange effects associated with the aurora. But the powerful actinic radiation of ordinary sunlight would upset those delicate balances, kill it."

"I see," said Blake. "That's why light drives it back." His voice sank. "But how—how did it put out the sun?"

"My experiments have proved," Lingard said deliberately, "that the upper atmosphere is flooded with a strange ultra-short radiation. It is of a type that excites fluorescence in helium molecules under certain conditions, and I am certain that it is the secondary radiation they emit that has shut off the sunlight, by the interference of exactly synchronized wave frequencies."

"That radiation?" Blake asked breathlessly. "Where does it come from?"

"I approximated the position of its source," said Lingard. "By directional methods, and triangulation. It is not far from here. North—probably beyond the mountains. We came north in the hope that with your aid we could locate and destroy the source—"

"And bring back the sun," whispered Blake. "It must be done." His shaggy head lifted. "You had just the one plane?"

"We were lucky to have that," said Mark Lingard, bitterly. "I think you know Frey—Ellet Frey?"

Blake bit his lip; his bearded face twitched with pain.

"I do. Because I wouldn't sell him the disrupter, he destroyed my father's business and his life. For three years I've been hiding from his trumped-up charges." His blue eyes were savage. "What has Frey done?"

"A strange thing, Blake. You see, something has happened to Frey."

GINGERLY caressing his broken arm, he explained:

"The success of my investigations, Blake, is due largely to your radio reports. When I put our observations together, and with Miss Maddon's aid, formulated a theory of the menace and a plan to avert it, I laid all my work before the president. He promised me every support. Funds, assistants from the Bureau of Standards, and the aid of the army in carrying out whatever campaign I could plan.

"But your messages had been rebroadcast all over the world. Five weeks ago, when they suddenly ceased, there was a storm of popular interest in you. At its climax, Ellet Frey announced that he was undertaking a privately financed rescue expedition."

"Strange," muttered Blake. "Unless he hoped to get the disrupter— But go on."

"Two weeks ago, with four planes and twenty-eight men, he flew north across Canada from Spokane. Miss Maddon and I were then in Seattle, organizing our own expedition. We had ten new army bombing planes, with a splendid corps of picked officers and scientists. The military part of the expedition was in command of a friend of mine, Major Wade Cameron.

"The day before we were planning to take off, Frey came back across Canada, with one battered plane, alone. I don't know what had taken

place, Blake. But something had happened to him—to his mind."

Lingard's low voice sank.

"He gave the newspapers a most absurdly fantastic story, Blake. He told them that it was you who had extinguished the sun."

"I?" Blake was breathless. "I?"

"His story was ridiculous; it would have been incredible to a sane world. He told how his expedition had been met by a fleet of strange black planes, shot down. He was captured, he said, by a group of fanatic cultists, and found you their leader.

"It was your discovery of atomic energy, he said, that had been used to put out the sun. Your purpose, he said, was to crush civilization, kill all humanity save your chosen handful, and then establish some grotesque anarchistic society. Your radio messages about the living ice, he said, had been merely a blind for the plot.

"He escaped from you, he said, fled in the plane to warn the world."

"And people—" whispered Blake—"people believed him?"

"The world isn't sane," said Lingard. "Men are afraid—horribly afraid of the life in the ice. They were eager for a chance to call the appalling truth a lie, glad to cast the blame on a human being, on something they could understand.

"The president accepted his story without question. Major Cameron received orders immediately to halt the expedition. And we learned that Frey had come to Seattle with a group of Federal men, with warrants for the arrest of Miss Maddon and myself as accomplices in the alleged plot.

"We should have failed utterly but for the faith and courage of Major Cameron. Miss Maddon had come to me at the airport. Major Cameron pretended to arrest us, announced that he was taking us to Washington for trial, and flew north with us instead.

"Frey was outwitted for the moment. But when Cameron ignored radio orders to turn back, we learned that Frey himself had taken off in another plane to follow us. He is only a few hours behind, and he has threatened to kill us on sight. A whole squadron of army planes took off as soon as it could be organized, to follow and aid him to destroy us.

"We have not only the ice to fight," Mark Lingard said solemnly, "but man as well."

He limped to the window.

"Back in the States," he whispered, "it seemed incredible that the ice was alive—that's why Frey's story was so promptly accepted. We must kill the ice, Blake. If we fail, human life won't last very long. Already people are dying by tens of thousands, as supplies of food and fuel run out. Frost has reached the equator, the living glaciers are pushing down.

"It is a new ice-age dawning. The ice will overwhelm forests and cities, until the continents are covered with living green. Even the oceans will freeze; green fire will spread through them, until the planet is one green globe of endless frozen night, ruled by the entity of frost."

"We must not fail," Blake was whispering grimly, when he heard Jane's low voice, and went eagerly back to the waking girl.

CHAPTER IV

The Fiend of the Forest

IT was four hours later that the three set out through the still violet dusk, across the living ice. Jane Maddon had declared herself able to follow the sled.

The five lean huskies were running before the sled. It carried the sigma-bomb, and Blake's carefully selected equipment.

Following were the three: Blake with his long whip and the disrupter; Jane Maddon, still white-faced with pain; the brown little scientist with his slung arm, limping awkwardly on unfamiliar snow-shoes.

The disrupter, set to give an intense hot golden beam, burned a path across the snow, into the mysterious menace of the frozen barrens.

"Your batteries—" Jane had asked as they started, "won't they burn out?"

"They are half a pound of gold," Blake told her. "They would last a thousand years."

"Your atomic discovery?" she cried eagerly. "Oh, I'm so glad, Mace!"

"If we win, Jane—if life goes on," he whispered, "it can give us—everything. It will clear Dad's name, and make us safe from Frey—"

Beneath the fur parka, her grey eyes shadowed.

"But Frey's after us, Mace," she whispered. "In the north, something's happened to him. I saw him, after he came back—" Her voice trembled with dread. "He's mad—he's a fiend. He's still after us, Mace—with the green of the ice in his eyes!"

In the changeless violet dusk, the motionless air seemed to congeal about them. Numbing, bitter, insidious, its cold penetrated their furs. A terrible silence closed in on them—the stillness of a world without life.

Jane refused to ride the sled, until, with a little gasping cry, she collapsed on the ice. Blake was putting her on the sled, when Wolf, the great lead dog, went mad. He whirled in the traces and crouched for an instant, with a singular wailing howl. The green of the ice, Blake thought, was oddly reflected in his eyes.

Out of the crouch, he sprang savagely back upon the other dogs. Two were injured before Blake could snatch up the rifle to kill him.

At the foot of the long, steep ascent to the pass, the exhaustion of the dogs forced a halt. The suffering animals gulped their frozen fish, buried themselves in the snow. Blake pitched the tiny tent, melted water for tea over the primus stove, thawed bread and dried meat. Hot food revived Jane. She and the crippled scientists crept into their sleeping bags, in the warming beam from the disrupter.

Blake's exhausted companions still slept when he heard a distant droning, saw a dark speck hanging in the south above the trail. The plane was drifting low across the green glaciers, but the fingers of the ice did not attack it—the ice, he thought, must know it for a friend.

Blake leaped instinctively to the disrupter, cut its output down to one kilowatt. But even the weakened beam, he realized, left them clearly visible. He dared not cut it down any farther, for already the green tentacles were writhing nearer. Piercing cold sank into him.

"It's Frey," said Lingard, roused. "That's his plane."

"I cut down the ray as much as I thought safe," said Blake. "But it will still give us away."

"Better turn it up again," advised the little scientist. "We'll freeze, without it. And those green things are coming pretty close—they might snatch it away."

Blake increased the output again. Then he tried the mechanism of the rifle, found it immovable.

"Oil frozen," he muttered. "Maybe I can thaw it in the ray."

THE plane wheeled above them, dived. Above roaring motors Blake heard a rattling sound. He saw a line of white puffs march across the ice, toward the tent.

"Machine-gun!" Lingard gasped.

Blake snatched the rifle out of the warming beam, tried it again. It leaped and roared in his hands. He flung it to his shoulder and began firing at the plane.

It passed, rose and wheeled and dived again. The ice leaped into white spray under the machine-gun. Standing upright in the golden beam, Blake slipped his extra clips into the rifle, fired until the last shot was gone.

"Gun's empty," he muttered. "Guess we're finished—"

Then he saw the bright yellow ribbon rip backward from the fuselage. He saw the plane slip aside, dive, level, crash against a pinnacle of ice. For a little time the tangle of wreckage was dark. Grey smoke drifted out of it. Then a yellow flame was mounting.

"Got it!" he whispered, savagely exultant. "Gas tank—and maybe the pilot. We can go on, until the others come—"

He turned then, and his triumph

gasped and died. Mark Lingard was lying on the ice behind him, a bullet hole through his bandaged temple. Dead.

Bullets had ripped the top of the tent. Quivering with abrupt new apprehension, Blake flung back the flap, peered at Jane. She was very silent. He lifted the fur that was frosted with her breath, saw her weary face peaceful with sleep.

Blake carried Lingard a little away, and left him lying on the snow in his furs. He heated food, and then wakened Jane. They ate, watching the burning plane, while Blake told her what had happened.

"Mark?" she whispered, white-faced. "Dr. Mark dead! And I didn't even wake." She winced with pain.

"Don't mind that," said Blake. "But now it's up to us."

He dug the dogs out of the snow. Only three remained. Blake got into the traces himself, ahead of them, to break the way. Jane plodded behind.

He fell once, and his foot twisted under him. As Jane came to help him rise, his face was white with agony.

"We'll never make it," he gasped bitterly, staring at the ragged summits ahead, that glowed with unhallowed life. "We're mad."

But for hours, again, they toiled toward the pass. Then the gaunt-grey malamute, Amberjack, fell dead in the harness. Blake cut him out of the traces, dragged his lean body out of the way of the sled. His mittened hand caressed the shaggy, frost-crusted head, just once.

Jane, looking back, gasped and called out:

"Mace! I see something—*something*—following!"

"Couldn't be," Blake said. "Nothing alive—nothing but the ice. Even the wolves were all dead or gone, months ago."

But his blue eyes, searching, found the follower. A tiny figure, lonely and dark, it was still far out on the green-glowing barrens. He bent over the sled, found the binoculars. The ruddy glow drained out of his face as he lifted them; he trembled to a new chill.

"Frey! It's Eilet Frey," he whispered. "He wasn't killed, when his plane fell. He's walking after us, over the ice. His face is white, like frozen flesh. His eyes are mad, and shining green." He lowered the glasses. "His furs are light. I don't know what keeps him from freezing."

JANE was quivering, whitefaced. "He's not a man any more," she whispered fearfully. "He's a fiend—a fiend of the ice. The ice did something to him, when he was lost in the north." She crept close to Blake. "The ice has a mind," she said apprehensively. "Do you think—do you think it could hypnotize, or somehow dominate, another mind?"

Blake tugged at the ice in his red beard.

"That must be it," he said somberly. "I've been sure of it ever since Wolf went mad, with the green of the ice in his eyes."

Jane was pointing at the rifle. "Can you stop him?"

Blake shook his head. "No ammunition."

"I'm afraid, Blake. Afraid!"

"We must go on," said Blake. "He has no burden, but perhaps we can keep ahead."

When he turned back to the dogs, one was crouching, with a terrible green flaming in her eyes. She launched herself savagely at his throat. He went down under her. Only the thickness of his furs kept her fangs from his jugular, until his hunting knife had found her heart.

Watching the green die in her glazing eyes, he whispered:

"That was the ice."

Now Flash alone was left. Jane came silently to take the dead husky's place in the harness. They went on up the slope, often looking back. Sometimes they couldn't see the tiny lone figure of their pursuer; but when they did, he was always nearer.

"Do you know what he will do, when he catches us?" Jane whispered once, when she had looked with the binoculars at their gaunt, green-eyed Nemesis. "He'll stop us first, because

he is a tool of the ice. He will destroy the bomb. But he will do more—"

Her voice hushed; she shuddered.

Climbing unendingly, at last they dragged the sled into the narrow rocky gorge of the pass, and through it to the point where they could see beyond the range.

Blake stopped, when he saw the machine. Reeling with fatigue, Jane dropped to her knees in the snow. Behind her, Flash, the last husky, gave a short, hoarse bark, and fell dead in the harness, of sheer exhaustion.

Presently Blake laughed—a bitter, short, ironic sound. He limped back past the dead dog to the sled, and sat down on it.

"And we came to smash *that!*" he whispered. "*That!* With one little bomb!"

Inert, trembling in the snow, Jane Maddon stared at it. A dull, wondering horror came slowly into her grey eyes.

Mile upon mile ahead of them, beyond a barren plain of ghostly snow, the thing loomed unbelievably gigantic upon the green, dully shining ice. Incredible, colossal, it towered into the eternal vacancy of violet twilight.

Creation of a mind utterly alien to human understanding, of a life that had in common with human life little save the will to live, it was incomprehensible.

Part of it was black. Part of it was metal. Part of it was a machine.

Blake could grasp that much. But the form of it eluded him at the same time that it numbed him with shadowy horror. It was spidery, grotesque, as if it might be constructed of fourth dimensional entities. The black, colossal parts of it—he could find no fitting words for them—were silently moving.

Other parts of it, higher, not black, not metal, were nothing that could be termed mere machine. Their color was merely analogous to blue. They seemed somehow intangible. In material, shape, and function, they were beyond the grasp of the human mind.

The fingers of the ice coiled about the thing. Green arms reached up from the crested ice-waves of the surrounding glaciers, as if to move and adjust its enigmatic parts.

Blake had promised himself that they would rest in the pass. But they waited merely to make tea again, and warm a little food.

"It's too big," Jane whispered dazedly. "Too big! We can't do anything. But we must try."

"Try—" agreed Blake. "Until we are dead—"

THEY rose beside the sled. He bent to cut Flash out of the traces, and they pulled the sled onward. The slope now was downward, and it ran easily. Limping ahead in the slack traces, Blake warmed to a sudden hope that was like a steaming drink.

"We'll make it, at this rate!" he called. "If we could explode the bomb at some vital point, it might put the thing out of commission, big as it is."

"If we could stop it long enough to let the sun shine just a moment," Jane said, "I think that would kill the ice."

They had emerged from the narrow pass, upon the broad, snow-swept slope that fell toward the machine. In marching legions, the phantoms of green flame met them. Blake was breaking the way. Jane, behind him, carried the disrupter. She swung it back and forth, and the curling, questing tentacles fled from it—and ever returned. Green, swirling fingers circled the sled, moved with it, struck, recoiled, lurked, waited—

Sometimes Blake looked back, while they rested. Once he lowered the binoculars with a hand that trembled.

"I see him," he said. "Just stalking out of the pass. A gaunt, terrible giant—with the green of the ice in his eyes."

They were hastening on when far thunder rumbled through the frozen summits behind them. Bewildered, they paused to gaze back up the dark, rugged slope, that burned with the pale, ghostly light of the ice. Blake felt Jane's hand close convulsively on his arm.

"Mace!" she screamed. "The ice—"

Already he saw the motion above them. A vast green-white wave was

gathering on the slopes. It was sweeping down upon them.

Then his wild eyes saw the little mesa beside them, an age-flattened point of black granite.

"Run!" he screamed to Jane. "If we can get on the rocks, there—"

Jerking the sled about, they drove themselves into a lurching run toward the safety of the mesa. Distant cannon boomed across the glaciers; they shattered with crashes like collapsing cathedrals of glass. The ice quivered and rocked beneath them.

But they were on the slope beneath the little black plateau.

"Come on!" Blake shouted. "We'll make it—"

The warm golden light of the disrupter went out behind him. He stopped and whirled and saw that Jane had turned out the beam, flung down the little cylinder in the snow. Her face was queerly white. She had paused, with her body straight and tense. Her eyes were glittering strangely.

With a frantic desperate haste, Blake plunged for the disrupter. It was in his hands when Jane sprang upon him, savage and silent. Her bloodless face was a terrible mask, and her grey eyes were shot with a green that was like the green of the ice.

"Jane!" It was a tortured scream. "Jane—"

She was fighting for the precious tube. He held it from her clawing hands, tried to drag her up the rugged slope, toward the little table-land. They were tangled in the harness of the sled. The roar of the avalanche was deafening. Blake felt a sudden, piercing breath of frigid wind.

And a monstrous, freezing black paw crushed him down into roaring dark.

CHAPTER V

Ice and Gold

BLAKE was floating in a green sea and time passed him by like a wind. His body was tired; it was good to float so restfully and forget the wind of time. Yet some nagging problem tugged at his rest, while ages roared above. And at last he knew the trouble: the green sea was cold. It was freezing; green ice was grasping his body.

He battled the hardening frozen fingers, and strove to fling himself up into the wind of time. For there was a task he must do. The world was sinking into the green sea—and a girl. He alone could lift them back into the life of time.

He fought until something tensed in him, something snapped, and suddenly he was wide awake.

He was lying on the flat point of granite that had split the avalanche. Numb wrists and aching ankles refused to move. Hands and feet were bound, he saw, with leather thongs cut from the dog harness.

A low groan, shivering, piteous, twisted his head. He saw Jane Maddon on the ledge beside him, similarly bound. A little of her face was exposed beneath the parka, blue with cold, drawn with pain.

Beyond her, a little cliff dropped from the ledge where they lay, and the greenly shimmering slopes fell away from it, toward the colossal enigma of the machine that had extinguished the sun.

The girl moved. She was sobbing. "Sorry, Mace!" she gasped, bleakly. "I couldn't help it—I couldn't! The ice made me do it—the ice—"

"I know," he whispered. "Don't you worry!"

Deep relief flooded him, to know that she was herself again.

"Frey?" he breathed. "Frey—"

"He came," she sobbed, "after the ice struck us. He dug us out, and tied us. I think he's going to kill us. But now he's digging again."

Blake twisted his shivering, stiffening body, to look in the other direction. Beyond the rocky level he saw the pit, where they had been buried in the green wave of snow and ice.

Ellet Frey was in the pit. A haggard, gaunt, tremendous man. His skin, beneath his thin furs, was white as if already frozen. Digging at the

rubble of snow and broken ice with white bare hands he was uncovering the sled. He came at the bright steel cylinder of the sigma-bomb.

Blake watched with sinking heart as he unscrewed the little brass detonator from the bomb, and brought it and the empty rifle out of the pit. He laid the detonator on a flat rock, twenty yards away. Deliberately, with an appalling superhuman strength, he snapped the stock off the rifle. Gripping the barrel, he brought the breech mechanism down like a hammer on the detonator. It exploded sharply with a vivid blue flash.

Despair fell like a leaden hand on Blake. That bomb had meant the life of mankind. Grimly he had hoped, somehow, to escape and use it. But without the detonator it was as inert and useless as two hundredweight of stone.

Ellet Frey came stalking across the little mesa to his two prisoners. His bare, craggy face was utterly white. His eyes glowed green. He stopped on the black rock above them, and a dull, strange voice came out of his throat. It was like the voice of some monstrous thing, Blake thought, roaring far-off in a fog.

"Man—" it whispered thickly. "Your life—life of warmth and light—must die— Cold is conqueror—"

The gaunt, gigantic figure pointed one stiff white hand into the north. Blake looked again down the slope of glowing ice. Colossal and incredible beneath the eternal violet night, he saw again the thing that had put out the sun.

The uncanny voice, strange as the aurora whispering through a frozen fog, came again:

"Ice—reigns—"

Green light flamed in the mad eyes beyond the frozen mask. It was a mask—no longer a human face. And that dull, foggy voice was not the voice of Ellet Frey. It was the voice of the ice.

If the supernal, dreadful mind of the ice could speak to men, could it understand them? A sudden trembling seized Blake's big body. If his mind could meet the mind of the ice, through this thing that had been Ellet Frey, then here was a way to attack.

THE voice was saying, "Man—must die—"

Blake jerked his head toward Jane.

"Maybe he must!" he said, in a low, swift whisper. "But Frey didn't find the disrupter. It's still buried beneath the ice. And when I saw that the avalanche would overtake us I set it like a time bomb. It will go off after half an hour. Eight ounces of activated gold—"

"What!" the girl gasped with astonished wonder. "I didn't—"

"Hush!" whispered Blake. "He mustn't hear—might smash it—"

But the green fire had already flamed up in the hollow eyes of Ellet Frey, like dreadful panic burning. The gaunt tremendous figure whirled, ran back into the pit. Furiously, bare white hands dug into ice and snow.

Blake's hope trembled before sudden fear. Could the ice match his cunning with cunning enough to suspect? Or could its strange mind read man's mind? He must carry on.

"I didn't tell you," he told Jane. "We must escape before it explodes. Any minute—"

He writhed toward her, tugged with his teeth at her binding thongs. The frozen leather seemed hard as iron. His teeth ached to the chill. The knots were drawn tight; he accomplished nothing—

"He has it!" Jane's voice was sudden, fearful. "He's bringing it out of the pit!"

Striving to conceal his elation, Blake glanced at the giant form stalking with the little tube to the rock where he had smashed the detonator.

"Can't manage the knots," he gasped. "Got to go over the ledge. Any second now—"

"I can't—" Jane sobbed faintly. "Can't move—"

Blake caught her frozen furs in his teeth; writhing, he inched his way toward the ledge, dragged her beside him. Behind him, with the lifeless precision with which a robot might move, the tall haggard thing laid the

tube on a rock, and lifted the barrel of the broken rifle above it.

In the last, frantic instant, Blake flung himself off the ledge, dragging Jane after him with his teeth. They slipped twenty feet down the face of the little cliff, into deep soft snow that buried them.

"Shut your eyes!" Blake whispered urgently against the smothering snow. "Cover your face. Or the explosion might blind you—"

The universe turned into golden flame. Blake thrust his head deeper in the snow, pushed the fur parka down over his eyes. He tried to twist his body to shelter Jane's head.

Even through snow and fur and eyelids, the light came in a merciless, penetrating flood. Sudden heat was in the air, for an instant grateful, then terrible. The air was too hot to breathe. The snow melted above them. Water drenched them, cold at first, then steaming.

An eternity of flaming agony that slowly grew tolerable.

And a time came when they could uncover their eyes and sit up at the foot of the little cliff that had sheltered them. For many yards the snow was gone, the rocks hot and dry.

Bewildered, Jane asked faintly, "What happened?"

"There was no other way," Blake muttered. "I couldn't move; it was my mind against the mind of the ice. And I think I had a right to do it, after what the ice did to you. It was just, anyhow, that the human slave of the ice should destroy it."

"But what did you do?"

"I said that the disrupter was a bomb," said Blake. "I made Frey smash it. And when he smashed the tau-ray tube it left eight ounces of gold free to disintegrate at the full rate—half the atoms breaking down every fifty-nine seconds.

"I think the radiation wasn't good for the ice."

Anxiously, his streaming, half-blind eyes were peering into the north. Glaciers and snowfields were grey and white: the green of alien sentience was gone. The green streamers of flame no longer tended the fantastic machine.

"See!" Blake breathed exultantly. "That break in the rhythm of its motion! The ice is dead, and the machine is running wild—"

The hot rocks shivered abruptly. Roar of terrific grinding crashes came rolling up the slope. And suddenly the incomprehensible upper parts of the thing, looming so monstrously

[*Turn Page*]

WHAT IS YOUR SCIENCE KNOWLEDGE?

Test Yourself by This Questionnaire

1—To what geologic ages does the stegosaur belong?

2—Which came first, the Archeozoic era or the Cenozoic?

3—What does Eddington say about the expanding universe?

4—What are some of the raw elements that compose protoplasm?

5—Can an organism survive in its own waste?

6—Is anything in the Universe fixed or permanent? Why?

7—How do mushrooms and fungi reproduce?

8—Approximately how long would it take for radium to use up half of its bulk by self-disintegration?

9—Has ordinary sunlight an actinic radiation?

(A Guide to the Answers will be found on Page 128)

against the violet sky, seemed to twist and crumple. They vanished in a blinding flicker of colorless energy.

THE violet sky brightened, then, into the hazy blue of an arctic day. A flood of rosy light washed the slope below.

"The sun!" Jane was sobbing with hysterical joy. "It's the sun!"

Wet from the melting snow, their leather bonds stretched. Blake slipped his hands free, untied himself and Jane. Though the low sun still burned through the mists on the horizon, the air grew cold again as the atomic flame died. Stiff and weary, they climbed back to the little mesa.

Where Frey had laid the disrupter to smash it a ten-foot pool of molten rock still glowed dull red. Creeping up to its grateful heat, Blake saw that the black rock beyond was smeared with the white lime from an incinerated skeleton.

"Frey," he said, "must have died instantly."

"I think that he died days ago, when he was lost on the ice." Jane shuddered. "I think the ice had stolen his body—"

That gaunt, green-eyed, frozen mask came back to Blake like a haunting thing. He shut his eyes. His bearded face twitched. Seeing his pain, Jane said hastily:

"I'm sorry the disrupter is ruined. Can you build another, Mace?"

"Not here," he said gloomily. "Guess we're finished, Jane. We're lost here, without much food, or any way to travel. We can keep alive till the rock gets cold—"

His voice ended abruptly. He stared into the south, away from the colossal ruin of the black machine. The dull saffron sun hung low in the mist above the ice-clad range.

"There!" Jane cried joyously. "Look!" The music of motors grew louder and louder. "It's the army planes that followed Frey. They must have seen the light when your tube exploded.

"They see us, already! They'll take us back—"

Then she was in Blake's arms. Looking into her wide grey eyes, so near, Blake saw little gleams of green —like the green of the ice. Had they been there always? Or—

He shivered, and kissed her.

MIGRATION INTO SPACE

in

A Complete Novelette of World Conquest

The ASTOUNDING EXODUS

By NEIL R. JONES

in the next issue

The WORLD in a BOX

Jimmy Blane Battles Strange Reptiles of a Forgotten Prehistoric Era on a Man-Made Earth

By CARL JACOBI

Author of "Black Passage," "Death Rides the Plateau," etc.

JIMMY BLANE stopped his car, switched off the lights and paced to the door of the brownstone building. It was a huge many-windowed house of antique architecture, and the brass plate under the post box said: PROFESSOR SCOT HILLIARD.

Blane pushed the bell button, took a last puff at his cigarette and flung the butt over his shoulder.

"Sick of these Sunday supplement assignments," he muttered to himself. "They're all dry as dust. Wonder if McGraw'll ever give me and let me have the police run."

Presently heavy steps sounded within. A latch rasped and the door was thrown wide.

A huge, bulking figure stared out at the reporter. The man was dark-haired with a ragged, unkempt beard and thick-rimmed spectacles. An acid-stained rubber apron hung from

Blane looked at the prehistoric monster

his chest to his shoes, accentuating his height, and a green eye-shade was pushed far back on his forehead.

"Professor Hilliard?" Jimmy asked.

"Yes."

"My name is Blane—of the *Star-Telegram*. I came in regard to an address you made before the Gotham Science Club, an address in which you declared you could reproduce in living miniature the prehistoric life of the earth. The University science staff has denounced your assertions as being false in every detail. Could I have a statement from you, please?"

For a long moment Scot Hilliard made no answer. Then he shrugged, curled his lips and nodded scornfully.

"Come in."

Jimmy followed the man into the entrance way and from there up a flight of stairs. At the second level he halted before a large double door that opened on the right, hesitated, and whirled abruptly.

"If I grant you this interview," he said, "I must insist you write only the facts as I give them to you. I'll show you my invention, yes, but I'm not interested in having it introduced to the general public in a sensational manner, colored by idiotic journalism. Understand?"

Blane nodded. The door swung open, and he passed into a brilliantly illuminated room. Two feet over the sill he stopped short, turning his eyes slowly about him.

THE chamber was a huge laboratory, occupying apparently the full width of the house. From ceiling to floor the walls were lined with shelves, jammed with vials, tubes and glasses. Strange-looking apparatus glittered on all sides. The center floor was occupied by an enormous square-shaped object, fully fifteen feet across, its nature hidden by a loosely draped canvas.

But there was something else that stopped Blane's roving gaze and held it while his heart thumped a little faster. Directly across from the door, bent over a zinc-topped table, stood a young girl. A girl with a satin complexion, black, lustrous hair and large, brown eyes. Even in the dark-colored smock, with her hands swathed in heavy rubber gloves, she was a vision of feminine loveliness.

Hilliard slid a stubby briar pipe between his lips and waved his arm stiffly in introduction.

"My niece, Eve Manning," he said. "Mr. Blane is from the press. He's come to ask me about my invention."

A frown furrowed across the girl's face as she heard these words. Her eyes narrowed.

"But Uncle," she protested, "you're not going to demonstrate that machine tonight! You haven't tested it yet, you know, and something might happen."

Hilliard smiled and patted her hand. "No danger," he said easily. "Mr. Blane is just the type of witness I've been waiting for, and everything is in readiness." He turned again to the reporter. "Your hat and coat, please, and make yourself comfortable while I get you a pair of colored sun glasses. I'm using a new kind of magno carbon arc, and the glare might injure your eyes."

He shoved a chair forward, turned and disappeared through a connecting doorway. Jimmy sat down and looked at the girl.

She was even prettier than first glance had showed. There were attractive dimples on either side of the mouth, and the mouth itself was a delicate carmine bow with just the right touch of cosmetics. For a moment she stood there, answering his gaze silently. Then, darting a look over her shoulder, she stepped closer and spoke in a low, hurried whisper.

"Mr. Blane," she said, "you must leave here at once. Now, before my uncle returns. I'll tell him you were suddenly called away on another matter. I'll tell him you were—"

"Go?" Jimmy stared at her curiously. "Why, I've just come. Why on earth should I go?"

"You must go, I tell you. You're in great danger. Greater danger than you possibly could imagine. Uncle has been holding off his experiment until he found a man of your type. A young and athletic man. If you stay

here you may never leave this laboratory. Oh, I know all this sounds mad, senseless, but please believe me."

Jimmy crossed his legs and glanced thoughtfully at the array of equipment surrounding him. A long interval passed while he groped for words to answer the girl.

"I'm a reporter," he said at length. "I came merely to interview the professor, and I fail to see how any danger—"

The door slammed at the far end of the laboratory, interrupting further conversation, and Hilliard returned to the room. Striding to a switch-box on the near wall, the man made a careful adjustment to its contents, then crossed over to a chair opposite the reporter. In his hands were several pairs of green spectacles.

"BLANE," he said slowly, "I presume, since you were sent here to interview me, you know something of geology, something of the ancient rock-preserved history of the earth?"

Jimmy nodded, drawing forth pencil and paper. "I spent two years on the subject at Boston Tech," he replied. "But I've probably forgotten as much as I ever learned."

"You are acquainted with the divisions of time into which prehistoric world history has been divided, the Archeozoic era to the Cenozoic era?"

Jimmy nodded again.

"And which of those eras or periods strikes you as the most interesting, the most dramatic? Which one, if it were possible for you to pass back through the millions of years, would you choose to view with your own eyes?"

For an instant the reporter hesitated. Hilliard sat there far forward in his chair, eyes glittering with craft, determination. There were power and mental strength in that bearded face. And there was something else that brought a little chill coursing down the young man's spine.

"The Mesozoic, I guess," he answered. "What is more commonly known as the Age of Reptiles. I've always thought it would be an impressive sight to see those prehistoric monsters roaming about the scenery. Dinosaurs and pterodactyls, lizards as big as a house, and flying dragons."

Hilliard nodded in satisfaction, then leaped to his feet and strode to the square-shaped object in the center of the room. With a single movement of his massive hands he flung back the canvas covering and motioned the reporter closer.

Momentarily Jimmy's eyes were confused by a glaring light that burned before him. Then his eyes accustomed themselves to the blinding illumination, and he saw the object that housed the light. It was a glass-walled box, not unlike an ordinary showcase, save that the sides were of great thickness and the corners were fastened together with plates of riveted brass.

The light came from the middle of the case. At the near end, hanging in mid-air without support, was an object that looked like a small ball of clay. Extending from the right exterior wall of the case was a black instrument panel, replete with dials, queer-shaped tubes and several switches.

Hilliard pointed into the interior. "Blane," he said, "you are looking at an experiment that has been my work, my sole work, for almost five years. When I was still a member of the University faculty I postulated such a machine as this to my immediate superiors. They laughed at me, said I was an eccentric dreamy fool and that it would never work.

"The inside of this case is an absolute vacuum, the nearest parallel to the phenomenon of outer stellar space. In the center you see a magno carbon arc, suspended by a slender wire and giving off an intense amount of heat as well as light. Here at this end is a very small globe. Together the two objects represent a portion of the solar system, a diminutive cross-section of a tiny part of our universe.

"The space between the arc and the globe is the ninety-three millions of miles which separate our earth from the sun, lessened to a few feet. The diameter of the globe is the diameter

of our planet, reduced in proper ratio from over eight thousand miles. In short, you are looking at the manufactured equivalent of our sun and our earth on a dwarfed scale. Do you understand, Blane? A miniature sun and a miniature earth! Watch closely!"

THE man's hand slid downward, pushed a large switch into contact. Instantly there was a thundering roar and a pulsing vibration under the floor. The roar died away as the globe within the glass case trembled violently. Then it began to rotate faster and faster, moved and supported by some unseen power. Slowly it approached the arc in the center.

There was a note of suppressed excitement in the professor's voice as he continued.

"The globe is now rotating on its axis and moving in an orbit around the arc, which constitutes its sun. The axis, just like the axis of the earth, is inclined to the plane of the orbit. That globe is now a living, growing world!"

With rising interest Jimmy squinted through the sun spectacles. He was thinking of the strange warning given him by the girl.

"A *growing* world?" he repeated slowly.

Hilliard nodded.

"But there are a hundred other things necessary to a planet's growth which you could never manufacture," Jimmy protested. "Things beyond your power, things—"

"Storms, wind erosion, climatic changes, volcanic upthrusts?" Hilliard shook his head. "All has been taken care of. The globe is igneous, volcanic in nature, carefully made of powerful gases and molten rock, which will create an atmosphere. It is now in the first stages of the Archeozoic age, the beginning of a world. In a short time warm seas will form at the globe's equatorial zones. Early single-celled life will live and die on a microscopic scale in a matter of seconds. The lowest type of jelly fish will give way to the higher forms of mollusks, arthropoids, and so to the amphibians. By nine o'clock, if my calculations are correct, the globe will have passed through the Proterozoic era and the Paleozoic era. By nine fifteen it will be far advanced into the Mesozoic."

"You mean," interposed Jimmy, his eyes wide with amazement now, "that the globe will develop life? You mean that there will be plants, trees, reptiles—living creatures?"

Hilliard nodded. "On a minute microscopic scale, that is exactly what I mean," he said.

He seized a dial on the instrument panel and twisted it to its farthest marking. Beneath Blane's eyes the globe leaped into faster motion, changed from a crystal clear object slowly passing about the arc-sun to a blur of light. Each revolution in the orbit constituted one year, and the decades and centuries were dropping into the discard like grains of falling sand.

For a moment Scot Hilliard watched the process intently. Then he jerked erect.

"With the globe moving as fast as it is," he said, "it is impossible to study its surface without the aid of a specially designed rotating microscope. I have one in my other laboratory. One moment."

He went out, closing the door behind him. Silence swept into the white-ceilinged room. Jimmy stood there, staring at the glass case, frowning. It wasn't possible, this mad story he had heard. One man claiming he could reproduce in a few moments what nature had taken millions of years to accomplish. The reporter looked up as Eve Manning laid a hand on his shoulder.

"Will you go now?" she asked, a note of dread in her voice. "You have all the information necessary for your newspaper, and you can leave before Uncle returns. Please."

JIMMY studied the pretty face deliberately.

"Just what," he asked, "are you driving at?"

Her cheeks were ashen, her fingers trembling.

"Listen," she said. "It's not the geologic development of that little globe that Uncle is interested in alone. It's something bigger, more dreadful, more horrible.

"He wants to see how man, civilized man of this age and generation, would act if he were suddenly thrown back to the Mesozoic age, the time of prehistoric reptiles. He wants to see if man's brain would protect him against the hideous dangers which would then surround him."

"He wants what?" repeated Jimmy blankly.

"Oh, don't you understand, Mr. Blane? If you stay here, Uncle will use you for this experiment. He'll put you on that little world in the glass case. He'll insert you on that miniature planet and watch you through his microscope as if you were a worm or an insect."

The *Telegram* reporter burst forth in a harsh, dry laugh. "You're talking riddles. I could drop that globe in my pocket."

She looked at him quietly for a moment, then turned and led the way to a far corner of the laboratory. There she pointed a shaking finger to a large cabinet affair fashioned of sheet metal with an ordinary door at one side. At the front a flexible conelike projector tapered to a needlepoint.

"That," she said hoarsely, "is a size reducer. Uncle calls it something different, something scientific. But it too is his own invention. Once in it and the power turned on, a full-grown dog will emerge a creature of microscopic size, so small our most powerful glass is barely able to detect it. It will act the same with a man, with a human being. Uncle—"

Her words died off, and she stared past Jimmy, eyes suddenly wide with terror.

The reporter whirled. And what he saw made his heart skip a beat. Five feet away, swaying sardonically on the balls of his feet, stood Scot Hilliard. The man's face had lost its friendly smile now. It was contorted into a leer of fanaticism, grotesque with craft and cruelty. In his right hand was a leveled revolver.

"Since my niece has so inadvisedly told you of my plans," he said, "I need go into no further explanation. Blane, pace slowly backward, open the door of that cabinet and stand on the center of the contact platform inside."

Rigid, the reporter stared at the man. "You're crazy," he said. "Put down that gun."

"Uncle!" cried Eve. "You're mad."

Hilliard's black eyes narrowed to thin crescents.

"Back into that cabinet," he said again, "or I fire."

Jimmy's heart was racing now as he shot a look about him, searching for a way of escape. Suddenly he leaped forward and slammed his fist hard against the professor's arm. The automatic clattered to the floor, and the man reeled backward in fury.

An instant later the reporter was trading blow for blow, fighting with grim desperation. He used his fists with boxing skill, weaving slowly to the side in an attempt to reach the door.

"Fool!" roared Hilliard. "Don't you realize the chance of a lifetime is before you? I'm offering you the greatest adventure conceivable to man. And you fight to avoid it. Stupid fool!"

"In the interests of science, eh?" Jimmy panted. "Experiment on yourself if you want to. I'm—"

He seized an opportunity, shot forth two triphammer blows, slipped past the man, and raced across the floor of the laboratory. Five feet, ten feet, to the edge of the door, he ran. Then Hilliard, recovering his breath, jerked his hand to the zinc table and seized a heavy iron-handled spatula. He took instant aim and threw the instrument with all the force of his gaunt arm.

Jimmy had the door ripped open when the spatula struck. The ceiling seemed to crash downward upon his head. Colored lights whirled in his vision. For an instant he stood there, reeling. Then with a low moan he sank to the floor.

WHEN he awoke he was outside in the open air, and it was broad daylight. Sharp pains pulsed

through the back of his head. His eyes were blurred, his brain confused, seeking to place in their proper order the events that had happened the night before.

He staggered to his feet unsteadily, took a step forward, then stopped with a short cry of amazement. A strange scene lay about him. He was in the midst of a fantastic world, an impossible world crowded with weird shapes and objects. Great palmlike trees, forty to sixty feet high, with great bushlike upper portions and curious scaled trunks, walled in the glade in which he stood. Enormous ferns, their stalks fat and dripping with overnourishment, formed an undulating carpet that stretched to a wavering horizon.

To the left a reed-choked stream sent its oily water winding sluggishly between banks that were livid with white fungi and tangled yellow vines. And beyond the stream rose a jungle of growth, dark green, damp and forbidding.

Jimmy stood there, unable to believe his eyes. He walked forward, dipped his hand mechanically into the tepid water. He ran his hand over the woody frond of one of the ferns, drew it away, staring blankly.

Where was he? What had happened? The growth which pressed close about him on three sides was neither tropical nor subtropical. It was not the growth he was accustomed to nor that which he knew abounded in latitudes farther south. It was not of his world. And yet in spite of the utter strangeness of it all, in spite of the nightmarish dimensions and coloring, a faint chord of familiarity sounded far back in his mind.

For a moment he stood there, bewildered. Then like a knife thrust a thought came to him.

Back at Boston Tech in his senior year in historical geology he had built just such a landscape on a miniature scale. He had constructed a reproduction of this very vegetation, using bits of colored sponges, straw and plaster of Paris and the illustrations in his text books for models. His lips tightened slowly at the memory of that work and the more recent words of Professor Hilliard.

Horrible and impossible a realization as it was, he understood now. He was on the manufactured world in Hilliard's glass case in the laboratory. He was a creature of microscopic size on a miniature man-made planet that revolved about a carbon arc instead of a sun. He was back millions of years in the midst of the Mesozoic age, the only man on a synthetic earth.

And somewhere up there in the sky, far beyond his range of vision, a colossal figure would be watching his every movement through a gigantic magnifying glass, while every moment in that world of his would constitute hours, days for him here.

For ten minutes Jimmy Blane stood there thinking. He was a castaway on a hideous land, surrounded he knew only too well by hideous dangers. Yet somehow he did not wish to die. He was young, and life was sweet. He wanted to live.

HE shaded his eyes and scanned the horizon. To the west the land seemed higher and dryer, leading off to a sort of tableland, marked by only an occasional clump of trees. Without knowing why the reporter scrambled up a little limestone acclivity and began walking in that direction. A hundred thoughts were whirling through his brain. He must find water, fresh water, and he must find food and a place to sleep.

And yet as he walked, he found himself unconsciously examining the curious growths around him, cataloguing them as the memory of his college studies slowly returned.

Here was the flora of a young world, vegetation in the early stages of development. Here were Thallophyta, Bryophyta, Pteriodophyta, cycads and conifers, curious bushy trees with stunted trunks, ferns of gigantic size, flaccid vines that spread their entanglement everywhere. But presently the jungle was left behind, and he emerged into the plain. There was no wind. The air was hot, lifeless, the sky above faintly blue, and the sun,

now at its zenith, gleamed like a flat, white ball.

On and on he walked. The grass beneath his feet was thick and long. It rustled like silk, leaving the marks of his shoes clearly defined behind him. Ahead he saw that the plain was slowly descending again, leading into a lower swamp area that looked gloomy and forbidding.

Although as yet he had seen only botanical growths, Jimmy knew he was in a world teeming with life, life of strange forms and varieties. Yet had he been in the Proterozoic era, millions of years earlier, he could not have been more alone. Reptiles held sway now. It would be eons before the lowest type of ape would be born. Eons more before man would be created. Millions of years before some Babylon would raise its temples to the sky, before an Egypt would take form in a Sahara.

He had been walking in a daze, pacing mechanically while he lived with his thoughts. Now suddenly his mental train was swept away, and he stopped rigid, staring like a wooden image.

Twenty yards away a nightmare object had suddenly risen up before him, emerging from behind a clump of trees. Forty feet from head to tip of tail, it stood there staring at him with gleaming eyes. Jimmy's heart leaped to his throat. The thing looked like a horribly malformed lizard, increased in size a thousand times. The head was small with a gaping slit for a mouth. A double row of great bony plates extended along the back and down the tail. It was a stegosaur, the great armored dinosaur of the Jurassic and Cretaceous, the colossal herbivorous reptile of a prehistoric age.

For a moment Jimmy stood riveted to the spot. He could hear the thing's gasping, sucking inhalations of breath, and he could feel the ground tremble as it moved ponderously toward him.

Then, smothering a cry, the reporter turned and ran, ran blindly toward the nearest reaches of the marsh. Down the slope and into the foul ooze he raced, plunging through the thick water and into the dripping foliage. Insects swarmed about him in stinging hordes. Beneath his feet fat squirmy lengths of black horror wriggled to safety. Something ripped through his trouser leg, gashed through the flesh to the bone. Two crocodiles, twice the length of the modern gavial crocodile, came at him, white jaws agape.

He escaped them and plunged on. Not until he was far in the depths of the poisonous swamp did he stop. Then in a state of near exhaustion he climbed partway up a dead tree, flung his body over a wide limb and waited to regain his breath.

IT was twilight before he at last fought his way out of the marsh. The sun was sinking in the west, and a starless sky above was slowly darkening. It seemed strange, inconceivable that that sun was but a manufactured magno carbon arc suspended from the roof of a glass case by a piece of wire. It was hard for Jimmy to realize that this vast world surrounding him was a globe so small it could be dropped anywhere in the streets of his own city without attracting the slightest notice.

He was in open country again. Despair was in his heart as he stood gazing. As far as he could see from an elevated ridge it was all that same wild, virgin, fantastic country. No distant sail, no thin streamer of smoke, no sign of habitation of any kind. He was alone, utterly alone in an alien world.

Pangs of hunger and a sudden feeling of thirst sent him out of his brooding presently. He appeased the latter with long draughts from a clear spring that bubbled out of a fissure in the rock almost at his feet. Then, descending to the shore, he managed to find several species of mollusks which seemed edible. They were typical Mesozoic pelecypods, fossils of which he had studied in his student days. He gulped them down with repugnance, then hurried into the forest in search of dry wood and tinder.

The matches in his pocket were unharmed. He heaped several stones in

a circle, forming a crude fireplace, shielded from the wind. Carefully he ignited the twigs.

And so Jimmy huddled close to his growing blaze and tried to convince himself that he was still in the midst of some wild dream from which he would rise shortly to laugh at his fears. But he knew it was no dream. The very sky above attested to that.

Black as velvet without a single ray of light, it engulfed him on all sides. There was no moon, no stars, for the simple reason that Professor Hilliard had created no moon and no stars. He had placed in his glass case but two bodies, this world and the artificial sun. And that sun was now bestowing its light and heat to another hemisphere.

At length bewilderment and sheer exhaustion overcame him, and he fell into a troubled sleep.

It was dawn when he awoke. The sea glinted like hammered silver, and the air was growing warm and humid again. Jimmy waded out into the surf, dashed water on his face and hands. Then, considerably refreshed, he returned to the beach and took stock of his surroundings.

Before another day had passed he would have to provide himself with weapons for hunting and for defense. He would have to explore the immediate district and find or erect a shelter that would give him protection from the elements and all dangers. The thought occurred to him that if he could climb to the summit of some mountain he might cast himself in bolder relief and beg the professor that he be returned to his own world.

In the eastern sky the sun still hung just above the horizon line. It seemed stationary, and the reporter found himself watching it curiously.

At intervals, all during the time he again searched the shore for more mollusks, he stared at it, wondering if his eyes were playing him tricks. Unless Hilliard for some unknown reason had slowed down the globe's rotating speed, that sun should be considerably higher in the artificial sky by now.

Then suddenly it happened.

A HUGE elongated shadow shot down from above, darkening the heavens, spreading an eclipselike gloom over the landscape. From somewhere in the invisible reaches of the sky there came a droning roar like the continuation of a hundred thunders. And then a vast cone-shaped object slanted down from the heights. It was a funnel-like steel tube, so large it seemed to cover the whole sky. Half a mile away its smaller end came to rest on a low hillock.

For several minutes while the colossal thing hung there motionless, Jimmy stood by the water's edge, unable to believe his eyes. Then with incredible rapidity the thing shot upward again, faded to a blur in the heavens and disappeared.

But at its contact point with the distant hillock something had been left behind, something that moved, that turned and began to run in the direction of the reporter.

With a shout Jimmy flung down his mollusks and raced toward it. Even at that distance with the light of the day only half risen, he saw that it was the figure of a girl, and he guessed rather than knew who that girl was.

They met in a little glade, a hundred yards from the shore. Breathless, puzzled, Jimmy looked at her, stretched forth his hand.

"Eve!" he cried. "Miss Manning! How did you get here? What has happened?"

She cast a quick glance at the fantastic growths about her, moved forward and smiled tremulously.

"I couldn't let you stay here, marooned on this world, without trying to help," she said. "I knew if I followed, Uncle would forget this mad experiment and do everything to bring me back. If we're together, it would mean your return too."

"But—but I don't understand," Jimmy stammered. "How could you—"

"The size-reducing machine was still connected with the glass case when Uncle left the laboratory a moment," she told him. "I'd seen how he worked the apparatus, how he stopped the revolutions of the little

globe in its orbit around the sun, how he adjusted the projector of the size machine to rotate at the same speed as the globe on its axis, and how he controlled that projector to touch the surface of the globe at a certain spot. I simply set the automatic controls, slipped into the machine's cabinet, and closed the door."

For an hour after that they stood there in the little glade discussing the situation. Quickly the reporter told her of the strange life that surrounded them, of the long day before and the subsequent night.

As she listened, the girl's eyes grew wide with amazement.

"But scarcely two minutes passed," she said, "from the time you were placed here to the time I followed. It doesn't seem possible."

They walked down the beach to the site of Jimmy's camp fire. To the east the sun was moving again, lifting from the horizon in its journey across the sky.

With Eve watching him half in tragic curiosity, half in amusement, the reporter placed several flat-topped stones in the glowing coals and proceeded to bake the oysterlike varieties he had found along the shore.

Jimmy was jubilant now. "All we have to do," he told her, "is wait until your uncle drops his projector down from the sky, rescues us and returns us to the laboratory. Man, what a yarn I'll have to write when I get back to the office! McGraw—he's city editor—will think I've been smoking opium."

SHE smiled with him, then suddenly grew serious. "It may not be as simple as all that," she said, frowning slowly. "Uncle may not miss me for a long time. He hasn't the slightest idea of what I've done, and until he sights the two of us here through his microscope, nothing will happen. Ten minutes of his time, you must remember, will constitute many days and nights for us here."

It was true. Blane sobered and fell quiet. "You shouldn't have come," he said at length.

Several times while they sat there a huge gleaming body appeared at the surface far out in the sea, twisting and turning, showing a giant snakelike head.

"Mosasaur," the reporter said quietly as Eve stared at it with horror. "Marine reptile. Carnivorous too. It shows definitely we're in the latter portion of the Mesozoic. Lower Cretaceous probably. But I don't think it will come any closer inshore."

Huge repulsive-looking birds passed high over their heads from time to time, but did not trouble them.

All had jaws with sharp teeth, and as the reporter said, probably belonged to the Ichthyornis order.

Noon came and passed with no sign of the projector. Jimmy, concealing his fears from the girl with a steady fire of conversation, set about to build a rough shelter for the night. It took long hours of tedious labor, that shelter, and crude and poorly fashioned as it was, dusk had come upon them before it was finally completed.

It was a lean-to, closed in on two sides, roofed with the fronds of a fern which Jimmy thought to be pteridosperm or plant of similar family.

Then once again, this time with Eve at his side, Jimmy stood on the summit of the ridge and surveyed the lonely scene. To the east stretched the sea, a leaden wedge continuing to the rim of the world.

To the west and circling far to the north and south rose the Cretaceous jungle, an impenetrable bastion of green, seething with unknown dangers.

"It's frightening," Eve said in an awed voice. "I can't realize that all this is on a microscopic scale, that that ocean is really only a few drops of water on a globe which I could hold in my hand. Oh, why doesn't Uncle do something?"

They returned to the lean-to shelter, ate a few more mollusks and lay down to sleep.

Outside there was black silence, broken only by the monotonous swishing of the waves against the lower shore.

Jimmy, tired unto exhaustion, drifted off quickly. He dreamed wild dreams of entering the Cretaceous jungle of this miniature world, losing his way, and walking on and on until his legs began to ache in their sockets and his whole body called out for rest.

Jimmy was awakened by a piercing cry. It seemed to come from far off, and it was repeated twice before his dulled senses grasped its significance. Then he leaped to his feet and looked about him. Broad daylight streamed through the front of the lean-to. But Eve—Eve was gone.

The reporter ran to the entrance, calling her name frantically. The ridge about the little camp was deserted. A hunched broomlike cycad tree waved its bushy branches in a low moan of mockery. Heart thumping, Jimmy raced higher up the acclivity and turned his eyes down toward the shore. And what he saw there froze him into immobility.

AT the water's edge, face white with terror, stood Eve. At her feet, scattered on the sandy floor where she had dropped them, lay a small pile of mollusks. And fifty yards down the shore, gazing at her like a creature out of hell, was a thing whose very existence the reporter found hard to believe.

It was a hideous giant-headed monster with fat, scaly body and cavernous jagged-toothed mouth. It stood erect on its hind feet, the sharp claws of its forefeet extended, the long pointed tail thrown out far behind. Even as he stood there motionless, numb with terror, the reporter's brain flashed back to his earlier studies and seized upon a name of classification. A theropod, a carnivorous *Allosaurus agilis*, the most ferocious of Mesozoic dinosaurs.

The horrible reptile was moving closer, heading slowly toward its prey.

Jimmy stooped downward, scooped up two heavy rocks and raced down the ridge. Before he reached the shore he snapped back his arm and flung one of the stones with every ounce of strength he could command. The missile fell far short.

On to the girl's side he ran, glancing over his shoulder at the approaching monster. They were hemmed in. Ahead was the sea, filled with dangers even more fearful than this theropod. Behind rose the ridge. And flanking the sea in both directions, the jungle. Their only alternative was the sandy shore which stretched far into the distance. But Jimmy and Eve knew that before they had covered two hundred yards of that shore the hideous thing behind them would have closed in and made its attack.

The reporter seized the girl's arm. "Run!" he cried. "I'll keep the thing's attention until you've got a start."

She hesitated.

"Run!" he repeated. "We wouldn't have a chance together."

Face white, lips drawn, she broke into a quick, jerky stride and raced down the beach.

Jimmy whirled, poised his second rock and looked at the monster. The therapod, moving kangaroolike on its hind legs, was only a few feet away now. Its mouth was open, showing the dead white interior. Its eyes were gleaming like hot coals, and the tail was lashing from side to side.

Again the reporter drew back his arm and let fly the stone. Brain filled with only one thought, the safety of the girl who had cast herself on this horrible planet to quicken his rescue, he watched the heavy object smash full force on the armored skull.

But the theropod only shook its head clumsily at the concussion. It paused an instant, then came on at renewed speed.

For a fleeting instant despair shot through the reporter like a bolt. Then he darted aside, thrust his body out of the theropod's path and circled completely around the reptile. It was a trick of counted seconds, and he accomplished it with only the scantest margin.

Heart racing, he ran twenty feet before the theropod was aware of the maneuver. Then he turned and hurled

a third rock. The heavy missile caught the monster a crashing blow in the left eye, drew instant blood and half blinded it.

Now was the momentary advantage Jimmy had been waiting for, and with a frantic lunge he shot past the reptile, threw caution to the winds, and ran headlong down the shore.

Far ahead he could see Eve standing motionless, waiting for him to join her. The girl had seized a wooden cudgel, a dead branch from a tree, and was urging him on. Behind, though he did not look back, he could hear the theropod thundering in pursuit.

As he ran, turmoil pounded through the brain of the reporter. How long would they have to fight against these hideous dangers? How long before Professor Hilliard became aware of his niece's action and took steps to rescue her?

And then suddenly as if in answer to his thoughts, a mighty shadow leaped down from sky to earth. A low, droning roar, tingling his whole body with its vibrations, sounded above. From somewhere in the upper reaches of the heavens that same cone-shaped tube of steel descended to eclipse the whole eastern horizon.

Down toward the water's edge it came, resting on a wider patch of sand, a few yards from the shore.

With an exultant shout Jimmy increased his speed. "The projector!"

The theropod seemed to sense what was happening. A quick glance behind showed Jimmy that it was advancing at a terrific rate now.

Could he make it? The reporter made a frantic survey of the distance that lay between him and the entrance of the projector. He waved his arm at the girl, motioned her forward. But stubbornly she refused to move until he was abreast of her. Then silently, side by side, they raced toward the safety that seemed so near yet so far away. Twenty yards from the steel opening Eve tripped over a submerged stone and plunged headlong. The reporter bent downward, seized the girl and with the added weight continued onward in his flight.

But at length they were in the wider patch of sand, the projector rising up like some geometric inverted mountain before them. With one last lunge Jimmy shoved the girl into the opening and slipped in beside her.

Instantly blackness closed in on him, and a great roaring like the fury of a hundred maelstroms smote his ears. He had a momentary feeling of the projector leaping upward at sickening speed, of his body being hurled into the upper reaches of the tube by some unseen power. . . .

SCOT HILLIARD was seated in one of the stiff-backed metal chairs in his laboratory.

His face was white and drawn, his eyes glazed and bloodshot. For ten minutes he had sat there in silence, staring across at the trim figure of his niece, Eve Manning, and at the reporter, Jimmy Blane.

At length he rose heavily, paced forward and extended his hand.

"I—I deserve no consideration," he said haltingly. "But will you accept my deepest regrets and apologies, Mr. Blane? I'm sorry. I must have been mad, out of my mind. I didn't realize the terrible thing I was doing when I placed you on that planet. It took the courage of my niece to show me what a fiend I was.

"If there is any way in which I can make amends, anything I can do—"

The *Star-Telegram* reporter looked at Eve and smiled. "Bygones are bygones," he replied. "We came back safely, that's all that matters. But what are you going to do with the globe, the little world in the glass case?"

Hilliard started and shook his head. For a moment he stood there, gazing blankly into space. "The globe," he repeated. "Ah, yes, the globe. I have extinguished the arc-sun, Mr. Blane, turned off its heat and light. The little globe is no longer a living world. Until I choose to stop it, it will continue to rotate on its axis and revolve in its orbit, but it is as lifeless and cold as the moon."

Science Questions and Answers

THIS department is conducted for the benefit of readers who have pertinent queries on modern scientific facts. As space is limited, we cannot undertake to answer more than three questions for each letter. The flood of correspondence received makes it impractical, also, to promise an immediate answer in every case. However, questions of general interest will receive careful attention.

ASTEROIDS

Editor, Science Questions and Answers:

Asteroids are often mentioned in your stories. I would like to know what they are exactly, and why there are so many of them. Why aren't they called planets?

B. L.,
Worcester, Mass.

Technically speaking, the asteroids are planets. But because of their extremely small size, they have been separately named, *asteroid* meaning *starlike*. The name was suggested by Sir William Herschel because no telescope was able to resolve them into more than points of light.

Another great astronomer, Kepler, was the first to remark about the wide gap between the orbits of Mars and Jupiter, being no less than 342 millions of miles. In 1772, Bode's Law (a numerical relationship between the distances of the planets from the sun) indicated that a planet should exist between them. Neptune had been previously discovered by mass calculations, so the same method was tried with this hypothetical planet—unsuccessfully. Then the first of the pygmy planetoids was discovered by the Sicilian, Piazzi, who made detailed star maps.

By one of those "stranger than truth" quirks of fate, he made his famous discovery on the first night of the nineteenth century—January 1, 1801. His telescope showed a faint star-image that moved among the other star-images. It continued to move. Thus was observed the first of that group of cold, airless, miniature planets. It was named Ceres. The next year another was found, Pallas. In 1804, Juno. 1807, Vesta. The fifth was not located until 1845: Astrea. Then, beginning with 1847, not a year has passed without the discovery of one or more. Over two thousand are known at present.

Yet their aggregate mass cannot be over 1/3000 of Earth's. There are two theories to account for these tiny bodies. One that during the formation of the planets—molten matter jerked from the sun by a passing star—the cluster of globules that should have formed the planet beyond Mars failed to coalesce, and remained as scattered material. The other, that a planet had once been there, and had exploded. Ed.

CENTER OF THE EARTH

Editor, Science Questions and Answers:

Is the center of the earth molten, or is it not? Some of the science-fiction authors seem to think it isn't. How much is definitely known of Earth's interior composition?

V. O.,
Los Angeles, Calif.

The recent science of seismology has served to give some idea of Earth's general make-up, by the interpretation of vibrations going through our planet. It is more or less of a blind groping, and cannot be taken as gospel fact.

The Earth is very nearly a perfect sphere. As Sir James Jeans says, it is more nearly a billiard ball than the flattened orange to which it is most often compared. And the roughness on the surface of an orange is far more extensive, in proportion, than the mountains and ocean hollows of Earth. If the inequalities of Earth's surface are like those of an exceptionally smooth orange, then the dirt and water layers are like a thin sprinkling of dust and dew.

What lies beneath this tissue-paper thinness of dirt and water which mean everything to us humans? It is thought that there is first a fifty-mile layer of solid rock. Then a section of plastic mineral matter 1,700 miles thick. And finally the molten core, 2,200 miles across. The molten core is generally credited, but there is an alternative theory that it is solid and derives its heat from an abundance of radioactive materials.

The Theory of Isostasy has it that the fifty-mile solid crust is really a semi-rigid mass *floating* on the ocean of plastic material, called the *barysphere*, and this in turn floating on the molten mass of the central core. All our earthquakes, landslips, and vanishing and appearing islands are thus due to shiftings of the barysphere, which is always moving and twisting slowly. Mountains stick up higher than the rest of the land because they are the *lightest* of all materials, and so get pushed up further when major crust cataclysms take place.

The fifty-mile crust directly beneath us, called the *lithosphere*, is thought to be composed of three distinct layers. The topmost of granitic rocks, the middle of basaltic, and the lowermost of unknown composition. It is also suspected that buried in these unattained depths are incredibly large deposits of metals, like a vast treasure house. But like the Crocus' fortune of gold dissolved in sea-water, it may not yield itself to human efforts for many years, if ever. Ed.

DEUTERIUM

Editor, Science Questions and Answers:

There has been a lot of fuss made over the discovery recently of "deuterium" or "heavy hydrogen," and stories have even been written about it, but I don't see that it means much except as a scientific curiosity. What, if anything, have they actually used this over-weight hydrogen for?

M. L.,
Baltimore, Maryland.

Deuterium, it is true, has not as yet had any practical applications, but the keenest scientific minds have already visioned avenues of interesting research, some of which may lead to important practical results.

It has been found easier to experiment with deuterium not as such but in its chemical combination with oxygen to form common water. If the apparatus is sufficiently refined, it will be possible (oxygen having three isotopes) to form *nine* kinds of water: each having a different freezing point, boiling point and density. And each slightly different in chemical reaction. It has already been found that certain forms of animal life do not choose to live in "heavy" water, and some seeds retard their sprouting. This indicates a definite relationship between living matter and "heavy" water.

If we suppose our pharmaceuticals and hormones and vitamins as made of normal hydrogen, what new effects would they have on our bodies if made of deuterium? How would an anesthetic affect us if composed in part of deuterium? Would deuterium make a better fuel for the oxy-hydrogen torch? Would our sugars taste better if they contained "heavy" hydrogen?

These, and a thousand more, are the questions chemists and physicists and biologists are asking. It will take an immense amount of research to reveal the answers, but some of those answers may be astounding. Aluminum, at one time as dear as gold, worked a small revolution in the metallurgical field when it was produced cheaply. If deuterium is some day produced in quantity, it, too, might spread waves across the broad surface of industry. Ed.

DOES AN AMOEBA THINK?

Editor, Science Questions and Answers:

Could you answer this question? I am curious to know if a single-celled creature, like an amoeba, has a mind? Does it "think" or does it just exist?

G. P.,
Chicago, Ill.

Science does not have an answer to this question, except to say that the amoeba definitely lacks the type of thinking organ we have, the brain. But, on the other hand, it exhibits phases of activity that distinguish it from dead mineral matter, so its state of consciousness must lie between that of cerebral life and non-living matter.

The amoeba performs all the conscious functions of life—assimilation, growth, reproduction, motion, and reaction to stimuli. Thus, in a manner of speaking, it has a "mind." It reaches a pseudo-arm around a bit of food; a blob of dough would not do that. It moves around, restlessly; a tuft of unliving cotton cannot of itself. It makes itself grow, at the expense of the surrounding medium; rocks do not tend to grow though they lie in the very same sort of stuff out of which they are made.

These are manifestations of conscious life. They indicate a *will* to do things that non-living substance does not possess. And though far removed in degree from the highly-developed minds of humans, it can be said that the amoeba has also a "mind." Ed.

ETERNAL LIFE

Editor, Science Questions and Answers:

Is there any hope that some day science will discover the secret of eternal youth? They say that each succeeding generation lives to a greater age limit. I wonder if that can go on and on till in the future there will be no death?

C. W.,
Binghamton, New York.

There are some popular fallacies connected with this problem. One is that science is able to retard the natural course of impending death, and thus prolong an individual's life. As a matter of fact, it is not the individual that has been so benefited, but rather the aggregate mass of persons within its scope. The *average* age limit has been raised, through effective sanitation, efficient medication, and skillful life-saving surgery; more people die at the age of sixty now than did people a hundred years ago. But, anomalous as it seems, any single person has no expectation of living longer than he would have in 1836.

To make it clearer, science has succeeded admirably in staving off death where death is premature, and in a sense, unnecessary. Appendicitis today, because of wide hospitalization, does not sever unfinished lives nearly as often as in earlier times.

Perhaps the greatest desire of men is for eternal youth. All through the ages, mankind has searched for this supreme secret. Success is as remote today as a thousand years ago. In some measure, the dream has been realized. We nowadays enjoy *youth* for a longer time than did our forefathers, what with the comparative serenity of modern life, and its lightened burden in this age of mechanization.

Yet it remains that a man of forty-five today has no more chance of living to the age of eighty than a man in the last century. He may be saved from *premature* death by an emergency operation, but the approach of dissolution is inevitable.

A heart fragment of a chick embryo was immersed in an artificial, nutritive medium in 1912, and it is still growing actively today. It is almost immortal. It cannot be predicted, but some day science may find this the first stepping stone toward longevity. Ed.

THE PLANET PLUTO

Editor, Science Questions and Answers:

My astronomy book is too ancient to give

(Concluded on page 127)

The SCIENCE FICTION LEAGUE

A department conducted for members of the international SCIENCE FICTION LEAGUE in the interest of science fiction and its promotion. We urge members to contribute any items of interest that they believe will be of value to the organization.

EXECUTIVE DIRECTORS

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WHO will be directly responsible for the marvels of the future — scientists or science fiction writers? This controversy is a moot one, bitterly contested by both factions. One school insists that science is too conservative, almost reactionary, mainly because of a lack of imagination.

It took the imagination of a Jules Verne to foresee the modern submarine. It required the inspiration of an H. G. Wells to visualize and depict the use of the airplane as an instrument of warfare.

Today science is still striving to achieve the perfection of many wonders anticipated earlier by science fiction writers. Time-traveling, space conquest, atomic disintegration, transmutation of the elements—all of these events of the world of tomorrow were first presented by science fiction writers who possessed imagination.

TRIAL AND ERROR

Cold science, devoid of imagination, sometimes stumbles along, by trial and error, blundering into success after multiple failures. The X-ray, for example, was discovered by sheer accident—and it's been the same with many other inventions.

Members of the SCIENCE FICTION LEAGUE are strongly imaginative. That fact is indisputable. The readers of science fiction and of THRILLING WONDER STORIES are everywhere. They are to be found on every continent and in every country, even where the English language is not spoken. They are virtually as numerous as the myriad stars dotting the firmament. All closely united by a common love for the most absorbing and inspiring variety of literature—science fiction.

Never before have members been so dynamically active. The Los Angeles Chapter has doubled its membership. The Brooklyn Chapter has been reorganized. The Philadelphia Chapter looks forward to a successful new year. Fan magazines devoted to the discussion of science fiction and its many phases have become widely circulated.

Everywhere there are evidences of the new popularity of pseudo-scientific fiction. Readers of THRILLING WONDER STORIES are urged to submit items pertaining to science fiction that they feel will be interesting to fellow LEAGUE members.

PRIZE LETTER CONTEST

There is still time to win an original drawing by the famous illustrator, M. Marchioni. Illustrations are in black-and-white, exactly as they were prepared for reproduction. You can win one of these original drawings by writing a letter, not more than three hundred words long, on the subject, "What Can I Do to Promote Science Fiction?" Writing skill does not

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There are members and chapters in every part of the globe—there are interesting get-togethers, and members have worthwhile correspondences with one another.

To obtain a FREE certificate of membership, tear off the name-strip on the cover of this magazine, so that the date and the title of the magazine show, and send it to SCIENCE FICTION LEAGUE, enclosing a stamped, self-addressed envelope. We will forward you, in addition to the certificate, further information concerning LEAGUE activities.

Everybody—please write the editor of THRILLING WONDER STORIES a letter every month. We will publish as many as space can allow. We want all your opinions, suggestions and criticisms! They are helping to make THRILLING WONDER STORIES, *your* magazine, the kind of a magazine *you* want it to be. —THE EDITOR.

THE SCIENCE FICTION LEAGUE

—a department conducted for members of the International Science Fiction League in the interest of science, science fiction and its promotion. We urge members to contribute any items of interest that they believe will be of value to the organization.

There are thousands of members in the League with about forty chapters in this country and abroad, and more than that number in the making all over the world. An application for readers who have not yet joined will be found below.

FOREIGN CHAPTERS

Leeds Science Fiction League (Chapter No. 17), Director, Douglas W. F. Mayer, 20 Hollin Park Rd., Boundhay, Leeds 8, Yorkshire, England.

Belfast Science Fiction League (Chapter No. 20), Director, Hugh C. Carswell, 6 Selina St., Belfast, Northern Ireland.

Nuneaton Science Fiction League (Chapter No. 22), Director M. K. Hanson, c/o Mrs. Brice, Main Road, Narborough, Leicestershire, England.

Sydney Science Fiction League (Chapter No. 27), Director, W. J. J. Osland, 26 Union Street, Paddington, Sydney, N. S. W., Australia.

Glasgow Science Fiction League (Chapter No. 34), Director, Donald G. MacRae, 36 Moray Pl., Glasgow, Scotland.

Barnsley Science Fiction League (Chapter No. 37), Director, Jack Beaumont, 30 Pontefiact Road, Barnsley, Yorkshire, England.

(Continued on page 118)

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(Continued from page 117)

OTHER CHAPTERS

There are other domestic Chapters of the LEAGUE, fully organized with regular meetings, in the following cities. Addresses will be furnished upon request by Headquarters to members who would like to join some local branch. Chapters are listed chronologically according to Charter:

Lewiston, Ida.; Erie, Pa.; Los Angeles, Calif.; Monticello, N. Y.; Mayfield, Pa.; Lebanon, Pa.; Jersey City, N. J.; Lincoln, Nebraska; New York, N. Y.; Philadelphia, Pa.; Oakland, Calif.; Elizabeth, N. J.; Chicago, Ill.; Tacoma, Wash.; Austin, Tex.; Millheim, Pa.; Bloomington, Ill.; Newark, N. J.; Stamford, Conn.; Denver, Colo.; Lakeport, Calif.; Ridgewood, N. Y.; Woodmere, N. Y.; Beckley, W. Va.; Tuckahoe, N. Y.; South Amboy, N. J.; Pierre, S. Dak.; Albany, N. Y.; and Boonton, N. J.

CHAPTER NEWS AND GENERAL ACTIVITIES

LOS ANGELES

Roster of Chapter 4 has doubled since last report! This active membership of twice as many THRILLING WONDER STORIES readers as few months before means increase of 100%! Newcomers include: nurse Fairchild, X-ray specialist and first feminine member of LA League; artist Barr; fantasy author Henry Kuttner; and students.

Artist-member Mooney is at present preparing series of impressions of well-known characters of science and fantasy fiction. One of his first pictures is a large color portrait of Narodny, last poet of the Merrittale, "Rhythm of the Spheres," in Oct. T. W. S.

Barr is bringing some of his pseudo-science stories to Club for members' reactions before editorial submission.

At several meetings, exchanges and sales of back issue S-F mags have been conducted among members.

About a month after open house example of

APPLICATION FOR MEMBERSHIP
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Science Fiction League,
22 W. 48th St., New York, N. Y.

I wish to apply for membership in the SCIENCE FICTION LEAGUE. I pledge myself to abide by all rules and regulations.

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(Print Legibly)

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City .....

State..... Age.....

Occupation..... Hobby.....

I am enclosing a stamped, self-addressed envelope and the name-strip from the cover of this magazine (tear off name-strip so that the name THRILLING WONDER STORIES and the date can be seen). You will send me my membership certificate and a list of rules promptly.

2—37

"Esperan-Test." Executive Director Ackerman arranged for similar eve, invited Leaguers to his filmland flat for informal meeting and inspection of his collection. Those able to attend saw photo files containing 500 kodaks from fantascience films, domestic and foreign, produced during past decade! Such unusual books in his imaginative library as "The World of Tomorrow," scientificreation from England; imported German edition of "Metropolis," story of the Scientificinemasterpiece; "Ultimo" by Vassos; Soviet Union science fiction novel (interplanetaryarn) printed in Esperanto; etc. Rare issues of professional mags and fan pubs. Selections of scientificartoons. Heard phonigraficreation of Frankenstein monster, in electrical laboratory sequence from original "Frankenstein," via sound disc from film. Etc. It is planned to visit other members' homes, at intervals, to view their individual collections.

Honorary Member Ackerman was out of town ten weeks on affairs of scientifantasy Field. Sojourning with his brother, bona fide League member, at his earlier address in San Francisco, was informed regularly of LA Activities by Treasurer Hodgkins and others in attendance. In San Francisco, FJA, First Class, met Secty, Science Fiction Advancement Assoc.; contacted League members from San Mateo, Hayward, Oakland, Berkeley—nearby and across-bay cities—with aim of stimulating interest; secured new members; etc. At this writing he is returning to Movie Metropolis within a week, bringing back items of interest for fantascience circle. A scientificelebratron was planned for Yuletime, with Scienti-Santa getting his Claus on all attending for imaginative as well as merry. All X'-mas affair! League meetings are every other Thurs. eve, from 7 o'clock on; 2d floor, reserved "Switzerland" room Clifton Cafeteria, 648 S. Broadway, downtown Los Angeles. We have participants from Hollywood, Beverly Hills, even Glendale. All local followers of imaginative literature are urged to attend! A banner 1937 is expected!

PHILADELPHIA

Our first annual reorganization meeting was held at the residence of John V Baltadonis, one of our most active members. This meeting was certainly the most successful one the Philadelphia Chapter has witnessed in its one and one-half years' existence. For this meeting the entire enrollment turned out, which is indeed a rarity. In addition, a visitor from Brooklyn was present, in the person of George R. Hahn, a hitherto inactive fan.

The meeting was called to order by Milton A Rothman, the Director. Robert A. Madle brought up the subject of electing new officers, which evoked favorable comment from the members. By a unanimous vote, Mr. Rothman, the capable Director, was reelected Director for the forthcoming year. Oswald Train became Treasurer and Mr. Madle was elected to the post evacuated by Raymond Peel Marriella, that of Secretary.

Following this, a small fan magazine which we are publishing became the topic of interest This magazine, although hektographed at the present time, will appear in a printed format in 1937. Many famous authors and fans will be featured, such as David H. Keller, Ralph Milne Farley, Donald A. Wollheim, etc.

Charles H. Bert commenced a general discussion on science fiction when he asked, "What do you think of the Van Manderpootz series?" The result of this question was that everyone present considered those stories among the best of Stanley G. Weinbaum's masterpieces. Especially liked was "The Ideal."

This Chapter, although slow in getting a good start, is now well established, and meetings are held every other Saturday night at the residence of Mr. Rothman, 2113 N. Franklin Street. In addition to being an active science fiction fan, Mr. Rothman is quite interested in science and can speak interestingly on practically any scientific subject. All members residing in Philadelphia are urged to communicate with Mr. Rothman, at the above address.

BROOKLYN SCIENCE FICTION LEAGUE

A meeting was held at the home of Frederik Pohl, 349 St John's Pl. Brooklyn, N. Y., who had applied for a charter, and who had contacted several SFL members previously for the purpose of organizing a new Brooklyn Chapter.

Members present were Frederik Pohl, Henry DaCosta, Elton Andrews, Walter Kubilus, Harry Dockweiler, and Allen Zweig. All those present were SFL members.

All agreed that the first business on hand was the election of officers. Frederik Pohl was unanimously chosen Director. Elton Andrews was elected Vice-Director in a heated contest. Henry DaCosta became Secretary, and Allen Zweig, Treasurer. Mr. Kubilus had

(Continued on page 120)

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30x5.00-20	2.35	1.05
4.75-17	2.40	1.15
29x5.25-18	2.60	1.15
29x5.25-19	2.60	1.15
30x5.25-20	2.60	1.15
31x5.25-21	2.90	1.35
5.50-17	2.95	1.45
32x5.50-18	2.95	1.45
33x5.50-19	2.95	1.45
6.00-17	3.10	1.45
30x6.00-18	3.10	1.45
31x6.00-19	3.10	1.45
32x6.00-20	3.10	1.25
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6.50-20	3.60	1.85
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33x4½	$3.10	$1.15
34x4½	3.10	1.15
30x5	3.20	1.35
33x5	3.40	1.45
35x5	3.65	1.55

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(Continued from page 119)

been nominated Treasurer but explained that he might not be able to attend regularly.

Mr. Pohl then read a communication from the editorial staff of THRILLING WONDER concerning the grant of a charter. The members decided that in so far as there seemed to be no active chapter in all New York City, they would apply for a Greater New York charter, which they would relinquish in favor of a Brooklyn charter whenever chapters should arise in other boroughs. Mr. Pohl, who had been Vice-Director of the old BSFL, explained that it had been virtually defunct since the beginning of the year, and he felt a new charter was in order.

The floor was thrown open to general discussion and ideas. The idea of a club magazine was brought up. As it seemed that such an organ would do much to bring the club into prominence, it was agreed to have such a paper. The title "Cosmic Call" was tentatively chosen. The only available means of publication was hektograph, which would be used until a mimeograph could be found. Mr. Pohl and Mr. Doekweiler were chosen editors. The question of dues was brought up and tabled until the next meeting.

Suggestions were made for theater parties to attend scientifilms. The members decided to try to have the first one to see "The Man Who Could Work Miracles."

It was suggested that a club library be established. This was tabled until the next meeting.

Mr. Pohl explained that as his quarters might be limited in size if they were to increase the way they ought to, another meeting place should be found. It was suggested that a YMCA room would be ideal. Mr. DaCosta volunteered to investigate.

NEW MEMBERS

UNITED STATES

E. A. Logsdon, P. O. Box 1144, Long Beach, Calif.; R. L. Benson, 1419 E. 8th St., Kansas City, Mo.; Murray G. Murphey, 623 Park Terrace, Colorado Springs, Colorado; Willis L. Bradley, 235 E. 49th St., N. Y., N. Y.; Stephen C. Davis, 41 Elizabeth St., Albany, N. Y.

Bob Duckworth, 3321 3rd St. N., Clarendon, Va.; E. J. Preacott, Denver Hotel, Denver, Colo.; Richard A. Paige, Jr., 2204 W. Saratoga St., Baltimore, Maryland; George H. Weston, Pennell St., Skowhegan, Maine; Bill Gullett, 714 So. 5th St., Springfield, Ill.; Henry Larson, 1317 Denny Way, Seattle, Wash.; Arthur C. Thomas, 2207 Adelbert Road, Cleveland, Ohio. H. C. Whitlock, Jr., 205 W. 32th St., N. Y., N. Y.; Geraldine Sullivan; 130 South St., Quincy, Mass.; Charles Dunwoody Strong, 1516 Downing St., Denver, Colo.

Burton Dumont, 69 Halstead St., East Orange, N. J.; Jack Zipgreon, 953 57th St., Brooklyn, N. Y.; Prof. Roth Francis, P. O. Box 4, Sta. D, Brooklyn, N. Y.; Clifford Francis, Henderson, W. Va.; Michael Brown, 618 Elizabeth St., Sumner, Wash.; Louis C. Reynolds, 399 Cooke St., Waterbury, Conn.

Earl W. Lewis, 68 West St., New Bern, N. C.; Harold A. Thompson, 114 E. Jones St., Milford, Ill.; S. N. Rudell, 641 Library Pl., Evanston, Ill.; Napoleon T. Pinzon, Pang. Acad. High School, Lingayen, Pangasinan, P. I.

Malcolm Stewart, Cumberland, Va.; W. D. Higginbotham, Florence, S. C.; Willis Ensley, Gen. Del., Ivanhoe, Calif.; Francis de Sales Kershaw, 134 Guthrie St., Dallas, Texas. E. W. Pfeil, 16 E. Collam St., Germantown, Phila., Pa.; Glenn Whaley, 306 Hickory St., Marshall, Ill.; Julius A. Pohl, 5829 Center St., Houston, Texas.

Everett Fink, 139 Ardmore Rd., W. Hartford, Conn.; Edward Zdanuk, 5 Lyman St., New Britain, Conn.; Leslie G. Alley, Jasper, Tenn.; Mike Klym, 2204 Cedar St., Syracuse, N. Y.; Eugene Favilla, 112 Franklin Ave., Brooklyn, N. Y.; Elton Andrews, 349 St. Johns Place, Brooklyn, N. Y.

Lawrence Maran, 210 W. 101 St., New York, N. Y.; Nolen Wimberley, 113 St. Charles St., Martin, Tenn.; Allen Michel, 425 Brooks Run, Bellaire, Ohio; Verne Judd, 709 W. Oakland, Austin, Minn.; Franklin Bruen, 784 President St., Brooklyn, N. Y.

Harry Owczarski, 2300 N. Central Park Ave., Chicago, Ill.; James E. Baron, 124 W. 94th St., New York, N. Y.; Richard Shiger, 50 W. 77th St., New York, N. Y.; Casimir Blazejewski, St. Johns Hospital, L. I. C., N. Y.; Arthur Kingston, Box 17, Framingdale, N. J.

Peter Poules, 1011 Ninth St., N. W. Washington, D. C.; S. D. Kirk, 257 Widener St., Phila., Pa.; Ellis Williams, Gen. Delivery, Sabinal, Texas; Maurice R. Summers, R.R.1, Hall, Indiana; Bertram Prager, 1061 Utica Ave., Brooklyn, N. Y.; John Larsen, 815 S. W. Vista, Portland, Oregon; Victor Borders, 336 Halsey St., Brooklyn, N. Y.; Ray Lussier, 25 School St., Gorham, Me.; Francis Fairchild, 1028 S. Vancouver, Los Angeles, Cal.

Douglas Sheeley, 301 23rd St., Denver, Colorado; Harley Grant, 708 Harrison St., Sumner, Wash.; George Quinn, 562 W. 144th St., New York, N. Y.; William S. Sykora, 31-51 41st St., L. I. C., N. Y.; Harold G.

(Concluded on page 128)

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I have a Kodak camera model six-sixteen, would like a telescope or what have you. Also model airplane plans, solid and flying. Joseph Blanchard, Jr., 57 Clendemmy Avenue, Jersey City, N. J.

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Cowboy spurs, mounted and engraved. Want Gritzner shoe sole stitcher or cement soling press. Karlan Bridwell, Forestburg, Texas.

Will swap 616 Kodak camera, F6.3 lens, for anything of value. Bill Blischok, 9907 72nd Ave., Edmonton, Alberta, Canada.

Have one rocket stamp to swap. What is your offer? No stamps wanted. Rudolf Trimmel, S. F. L. Wien X, Laxenburgerstrasse 26, Austria.

Have Eastman 3A Kodak, F7.7 lens, case, folding, excellent, with U. S. School instructions. Like new. Want stamps, or offers. Write to C. L. Hollmann, Washington, Mo.

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IN this department we shall publish your opinions every month. After all, this is YOUR magazine, and it is edited for YOU. If a story in THRILLING WONDER STORIES fails to click with you, it is up to you to let us know about it. We welcome your letters whether they are complimentary or critical—or contain good old-fashioned brickbats! Write regularly! As many of your letters as possible will be printed below. We cannot undertake to enter into private correspondence.

BEST ISSUE TO DATE

By Robert Sherk

The December issue of T. W. S. was the best to date. Imagine, John W. Campbell, Jr., Hamilton, Weinbaum, Zagat and Cummings in a single issue. "The Brain Stealers of Mars" was very good; more by this author, please. "The Brink of Infinity" was really Weinbaum's greatest story. The trick mathematical expression kept me in suspense until the very end. Hamilton's story wasn't half bad. Zagat's "Lanson Screen" was a darn good story. They were all good, really, with Campbell, Weinbaum and Zagat tops. T. W. S. is making rapid progress—but it could progress much swifter if it went on a monthly basis. "Zarnak" is o.k. as far as I'm concerned. I think it is a good feature of your magazine. —119 Folger St., Buffalo, N. Y.

SCIENCE ARTICLES WANTED

By Elton Andrews

You know, I was almost afraid you were going to ruin T. W. S. for a while—your first issue wasn't as good as it might have been, you must admit. But the December number was great! Weinbaum, Hamilton, Cummings, Binder, and, best of all, Campbell's "Brain Stealers of Mars." I doubt that I've read a better story than that in years.

But the magazine can stand more improvements—science articles. Most of us real science fiction fans are interested in science. After all, s-f without science is like a rocket without fuel . . . or a time machine without a clock. You seem to recognize that with your excellent "Science Questions and Answers" Department and your Science Questionnaire. I find them quite interesting because I'm an amateur experimenter myself, have a pretty decent lab and workshop. I wonder if I can get in touch with any others having similar interests through the pages of your magazine? Surely there must be many such. Since the SFL must have many live-wire experimenters in it, I am joining herewith and I hope that I shall hear from many of them. I hope that T. W. S. will soon come out monthly.—349 St. John's Place, Brooklyn, N. Y.

(We are planning to use authoritative science articles on topics of interest to fantasy fiction readers in early issues of T. W. S. The first of these, by a world's authority, will soon appear. —Ed.)

SUGGESTIONS

By Ronald Amitage

I have just read the new THRILLING WONDER STORIES. In it you asked for readers' opinions. Well, here's mine: First, about illustrations. You should have three artists, namely, Marchioni, Paul and Wesso. Wesso, the best of them all, should do the cover and some of the interiors. Second, please give us a scientific editorial. Third, about the choice of stories. You seem to have a good selection of authors, but try to get Murray Leinster and Laurence Manning. Give us more interplanetary and time stories. Put in some stories about chemical research, and eliminate tales of biological monstrosities. Fourth, give us more future-science strips like "Zarnak." There would be a welcome feature. However, tell the cartoonists to make their subjects a little more advanced. Fifth, give the readers more departments, including one for scientific discussion. And put longer letters in the Readers' Department.

I don't expect you will take this huge order to heart, but above all don't forget that plea for Wesso.—20, Nicholson Road, Sheffield, 8, England.

LAST TWO NUMBERS EXCELLENT

By B. Marton

Just a few lines to give my opinion of the new magazine. Your first issue I thought was terrible—too much of the gallant hero stuff and one-man-defeating-an-army theme. But the last two numbers have been excellent, and I hope you maintain the same high level. You certainly have got the right authors.

The best story in the December issue was Weinbaum's "Brink of Infinity," although the others were excellent too. There is only one thing wrong with T. W. S.—it comes out only bi-monthly.—62a, Nevern Square, Earl's Court, London, S. W. 5, England.

CAMPBELL TOPS AGAIN

By John V. Baltadonis

This issue was about the best so far. The stories weren't so senile in plot as they were formerly. The best story in the issue was Campbell's yarn, "Brain Stealers of Mars." This story had a novel twist to it that was pleasing. "The Lanson Screen" presented a unique form of the screen protection idea. A. L. Zagat seems to be improving his writing technique. Weinbaum's story was very intriguing. I am so sorry to hear that there will be no more stories by him in the future. I'm anticipating the February issue. From the announced line-up—Fearn, Williamson, Long and Wandrei, it sounds like a corker.—1700 Frankfort Ave., Philadelphia, Pa.

MORE MERRITT WANTED

By Joseph Hatch

I am accepting your invitation. Opinions, suggestions and criticisms. Some comments first. Re the December issue of T. W. S. "Brain Stealers of Mars" was great. Campbell not at his best, but a fine story just the same. "Trapped in Eternity" was up to the Cummings standard. Give us more stories like his last two. "The Lanson Screen" was perhaps the best that Arthur L. Zagat has yet written, barring "Spoor of the Bat."

Had Stan Weinbaum revised "The Brink of Infinity" as I presume he intended to, I'm very much afraid it would have lost its simple beauty. It was truly a masterpiece. Hamilton's "Mutiny on Europa" was well written; it is an improvement on any number of his stories.

A severe brickbat. Please delete "Zarnak." The strip is too puerile for adults. In conclusion, congratulations on the covers. They're swell. And an earnest plea for more Merritt.—334 Maiden Lane, Lawrence, Kansas.

MATHEMATICS DRAMATIZED

By Robert A. Madle

Having perused the December issue of T. W. S. I wish to offer the following comments. The most interesting story was undoubtedly "The Brink of Infinity." But it wasn't science fiction! Weinbaum's story was purely a mathematical problem dramatized. But it was an unusual one, and surely

(Continued on page 124)

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DR. S. B. HEININGER, D. D. S.
440 W. Huron St., Dept. 150, Chicago, Illinois

(Continued from page 123)

made interesting reading. Campbell's initial appearance in T. W. S. with "The Brain Stealers of Mars" was a surprise. I expected to read a hackneyed story of the lowest order; but instead it contained an unusual plot, well written. "Mutiny on Europa" was fair. I have only one word to say in reference to "Island of Dr. X" by Echols and that word is—ouch!—33 E. Belgrade St., Philadelphia, Penna.

ON AMATEUR ASTRONOMY

By Milt Asquith

In response to your request for opinions on the advisability of having an authority write a series of articles on telescope making, I recommend that you adopt this idea and incorporate the series in T. W. S. After all, s-f readers must certainly have a tendency for the exploration of the unknown; otherwise, for adventure only, they would be contented with other types of fiction, such as western and detective stories, etc. The fact that science fiction finds an audience is indicative of aroused desire, on the readers' part, for the probing of the unexplored reaches of our universe.

The reader would have an excellent opportunity to further his interest in this connection by delving into amateur astronomy; and, as I see it, a thorough and simplified series of articles on telescope construction would be a quite welcome contribution to this field of endeavor. In the interest of all concerned I believe that a series of such articles would be an added asset to the magazine.—9415 Stanton Avenue, Chestnut Hill, Philadelphia, Penna.

(We're ready to supply science articles of this kind—if our readers want them. Won't those interested write in, as did Mr. Asquith?—Ed.)

ROCKET STAMPS

By Rudlof Trimmel

Some time ago Austria got her first Rocket stamps. Issued by an experimenting engineer, they have been used to pay additional postage for mails transported by the postal trial flights. Some stamps of the set are triangulars, like that shown in the accompanying illustration, others are rectangular.

First rocket carrying letters into the stratosphere started during the year 1928. But regular mail flights began February 2, 1931, and Rocket-mail opened for general purposes Sept. 9 of the very same year.

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Postal authorities who backed the experimenters at first have now decided to forbid them and have ordered that all available stamps be confiscated. Coupled with the small amount issued, this order has added much to the rarity of these unique stamps.

According to the engineer's reports, there have been sold not more than from 90 to 500 stamps of each value. Now you may realize their rarity and the zeal for which they are searched for by the science fiction collector.—Wien, X., Laxenburgerstrasze 26, Austria.

(We wish to thank Mr. Trimmel for his interesting discussion of the first rocket stamp. Our illustration has been photographed by Mr. Trimmel from one of the few stamps he has been able to save for his collection.—Ed.)

A WELL-BALANCED ISSUE

By Douglas Blakely

Back again, with another page or two of stuff to heckle the editors. Listen, boys: you've really got to enlarge THE READER SPEAKS. You should have at least twenty letters in each issue, with editorial comments in very small type (such as Joseph Mallory's letter in the December issue). Speaking of Mr. Mallory, I don't agree with his idea of having a series of articles on telescopes. You can get these in a library. I would do as a couple of other readers have suggested: run about three pages devoted to short-short stories by non-professional authors. Science fiction can always stand new blood. Take the case of Gabriel Wilson's "Earth-Venus 12" in the last issue. I've never heard of Gabriel Wilson, yet the story was good. You could run such a department after "Zarnak" is concluded.

If there had been a beautiful girl in John W. Campbell, Jr.'s, yarn, "The Brain Stealers of Mars," it would have been an excellent imitation of a Weinbaum novelette. But I never read a Campbell yarn yet, good as they are, that has even mentioned women. The man must be a woman-hater.

Of the nine stories in the December issue there are four space stories, four stories of science, and one time tale. That is as it should be. You have a carefully balanced issue.—2800 Irving Ave., So. Minneapolis, Minn.

(Editorial comments will always be annexed to letters calling for direct answers. Okay?—Ed.)

WEINBAUM WINS 'EM OVER

By Jerome Turner

Have finished your latest issue of THRILLING WONDER STORIES. I must say that things are improving immensely. A few years ago I was a devoted fan to *Wonder*. But as time went by the stories contained became more technical, harder to read and enjoy. There came a time when the magazine contained only three stories and a serial. I quit then.

(Continued on page 126)

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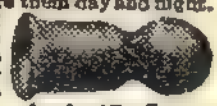

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State of New York } ss.
County of New York }

Before me, a Notary Public in and for the State and County aforesaid, personally appeared N. L. Pines, who, having been duly sworn according to law, deposes and says that he is the Publisher of Thrilling Wonder Stories and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher, Beacon Magazines, Inc., 22 West 48th Street, New York. N. Y.; Editor, 22 West 48th Street, New York, N. Y.; Managing Editor, none; Business Manager, H. L. Herbert.

2. That the owner is: Beacon Magazines, Inc., 22 West 48th Street, N. Y.; N. L. Pines, 22 West 48th Street, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of the total amount of bonds, mortgages, or other securities are: none.

4. That the two paragraphs next above giving the names of the owners, stockholders, and security holders, if any, contains not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustees or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders, who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

N. L. PINES, Publisher.

Sworn to and subscribed before me this 23rd day of September, 1936. Adrea Goldberg, Notary Public, commission expires March 30, 1938.

(Continued from page 125)

Lately, however, I was tempted to read the revived publication. I am certain that it will rise to a higher level than ever previously occupied.

A word about Weinbaum's "Brink of Infinity." I have a friend who dislikes all types of science fiction stories. I finally persuaded him to read "Brink of Infinity." He was so delighted with the velvety style that he immediately asked if I had any other stories by Weinbaum. I have been rationing him a story a day for the past week and he is demanding more. He is not the first to change his opinion of science magazines, due to Weinbaum. Every person prejudiced against science fiction, after reading some of his works, undergoes a change of heart.

I read "The Point of View" to an English class and the teacher recommended the beautiful and suspenseful style.—Kohut-Harrison, New York.

FRANK CRITICISMS

By Paul H. Spencer

Here's some opinions of the December issue. The cover was satisfactory, but why does the artist paint so many goggle-eyed monsters? In response to the caption you tagged on to my letter published in that issue I'm admitting that Campbell was good, after all! Despite my prejudice against it from the title, "The Brain Stealers of Mars" was thought-provoking and amusing. It was, beyond a doubt, the best story in the issue. Zagat's "The Lanson Screen" comes next. I especially liked the realistic style of writing, particularly in the 1997 sequences, "Mutiny on Europa" was a good story of its type. "The Island of Dr. X" was poor. If it were slightly changed, though, it would be a good bet for the movies. "Trapped in Eternity" was only fair. "Static" was mediocre. "Saturn's Ringmaster" was not so hot. "Earth-Venus 12" started off like one of Ray Cummings' yarns and ended up fair. "Zarnak" is not as good as the first two installments. Hurry up and conclude it.

Try to print more stories like "Circle of Zero" and "Brain Stealers of Mars." They were original and refreshing. "The Brink of Infinity" was excellent — but where did the illustration and the quotation come from? There's a chance I've said something antagonizing in this letter. If so, please consider that all these criticisms are intended to help your magazine. —88 Ardmore Road, West Hartford, Conn.

(The text for the illustration for Weinbaum's story, "Brink of Infinity," will be found on page 61, first paragraph, right-hand column, of the last issue.—Ed.)

ZAGAT'S TALE TOPS

By Forrest J. Ackerman

In my opinion each issue of T. W. S. has exhibited improvement since its inception; Dec. best to date.

(Concluded on page 128)

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SCIENCE QUESTIONS AND ANSWERS

(Concluded from Page 115)

any data on the recently discovered planet Pluto. I would be very interested to know something about it. Does it have an atmosphere which might support life?

E. Z.,
Hempstead, L. I., N. Y.

Pluto is too recent a discovery, and too inaccessible to our instruments, to be a well classified heavenly object. Some facts are known about it.

It is probably smaller than our moon, and unlikely to have any sort of atmosphere. Surface temperature probably minus 230 centigrade. Its surface might conceivably be covered with layers of ice, solid carbon dioxide, ammonia, nitrogen, etc., in liquid or solid form. Its mean distance from the sun is about 3,675 millions of miles. Its "year" is equal to about 250 of ours. Mean orbital velocity 3 miles a second.

From Pluto the sun would appear smaller than Jupiter does to us, and would not exhibit a disc. Yet the intensity of the sunlight would be about 300 times that of our full moon.

It has been theorized that because of its small size, Pluto may be one of a group of small bodies in that extreme orbit—similar to the group of asteroids between Mars and Jupiter. The new 200-inch telescope which will be in use within a few years may reveal these companion bodies, or perhaps even planets far beyond Pluto.

The possibility of life on this remote planet is rather speculative, mainly because of its extremely low temperature. Ed.

HEADLINERS
IN THE NEXT ISSUE

•

JUDGMENT SUN
By EANDO BINDER

•

ELIXIR OF DOOM
By RAY CUMMINGS

•

FLIGHT OF THE SILVER EAGLE
By ARTHUR LEO ZAGAT

•

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(Concluded from page 120)

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G. R. Dalmadge, State Humane Officer, Palo Alto, Cal.; Allan Collins, 15 Ronan St., Dorchester, Mass.; Stanley Goldstein, 2221 Branard St., Houston, Texas; Vincent Finelli, 85 Kearney Ave., Kearney, N. J.; H. Lloyd Higgins, 75 Lusk St., Johnson City, N. Y.; George Chobanion, 507 Lake Ave., Lyndhurst, N. J.; Richard Myer, 3156 Cambridge Ave., Chicago, Ill.; G. L. Kendter, 22 Pine, Tremont, Pa.

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S. Rahman, 131 Sidda Bazar, P.O. Ramna, Dacca, Bengal, British India.

THE READER SPEAKS

(Concluded from page 126)

"Liquid Life," that funny Farleyarn, topped with me in Oct.; Merrittale of Poet and Robots took 2nd. Fine fantastic cover.

Dec.: Excellent scientificover. Compliments on majority inner illustrations, particularly for "Brain Stealers of Mars," "The Lanson Screen," and "The Brink of Infinity," which, coincidentally, I considered best stories. Weinbaum's mathematical ms. was unique and most interestingly illustrated. "Brain Stealers," tending toward thought-variant, infusing good ideas to consider. "Lanson Screen" definitely thought-variant. Top! Zagtale intriguingly told in scenario style. That I remember, best story by A. L. Z. I've ever read, a No. 1 narrative, in my preference, best published to date.—236½ North New Hampshire, Hollywood, California.

GUIDE TO SCIENCE KNOWLEDGE ANSWERS

(See page 101)

1—Page 109, in WORLD IN A BOX
2—Page 105, in WORLD IN A BOX
3—Page 62, in HE WHO MASTERS TIME
4—Page 48, in BRAIN OF VENUS
5—Page 54, in BRAIN OF VENUS
6—Page 34, in BLACK FOG
7—Page 38, in BLACK FOG
8—Page 90, in THE ICE ENTITY
9—Page 94, in THE ICE ENTITY

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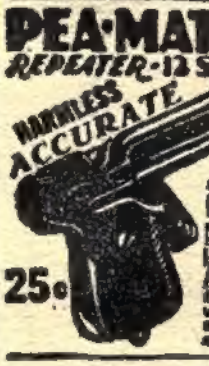

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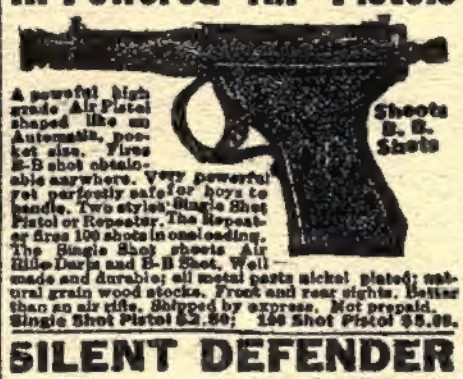

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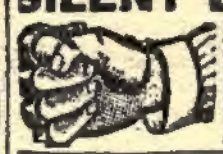

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